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ABSTRACT

The central purpose of this study was to assess the extent to which community college students and faculty agree on the evaluation and importance of cited critical issues in relation to online instruction. The researcher selected two urban and two rural community colleges in North Carolina to survey students and faculty regarding their satisfaction level with services offered, as well as their perception of the importance of critical issues identified by the researcher. Seventy-six faculty members were surveyed, with 32 responding (42% response rate). Four hundred and eighty-five students were surveyed, with 65 responding (13.4% response rate). Results included: (1) 91% of faculty found adequate program planning and development to be a critical issue, compared with 82% of students who found this issue to be critical; (2) 89% of students identified student self-direction and motivation as a critical issue, as compared to 94% of faculty; and (3) 91% percent of faculty felt that adequate release time to develop online courses was a critical issue, compared with 74% of students. The author also found that many instructors felt pressured to produce Internet courses and were frustrated with the addition of this project to their already loaded schedules. (Contains 15 tables and 50 references, with the research instrument appended.) (NB)

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Critical Issues Affecting Internet Instruction within the North Carolina Community College System

Mary Powell Kirk

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ABSTRACT

KIRK, MARY POWELL. Critical Issues Affecting Internet Instruction within the North Carolina Community College System. (Under the direction of Raymond G. Taylor.)

The central question for this study was to assess the extent to which community college students and faculty agree on the evaluation and the importance of the cited critical issues in relation to on-line instruction. A survey instrument was developed and piloted to measure student and faculty perceptions of these issues as they applied to their own experiences. In addition, to determining the relative importance of these issues, students and faculty were asked to identify whether or not these issues existed on their campuses.

The methodology for collection and analysis of the data involved correspondence with two urban and two rural community colleges in the North Carolina, requesting administration of a survey concerning critical issues affecting internet instruction. The theoretical framework for this study focused on critical issues affecting internet instruction from the student and faculty perspective. The critical issues were identified in the literature review and the researcher wished to see if students and faculty from selected North Carolina community college campuses perceived these issues as important. In addition, did certain services, directly affected by these critical issues, exist on their campus, and what was the satisfaction level of the students and faculty with the services offered.

The importance and satisfaction responses were used to produce a weighted satisfaction mean, and a comparison was made between the student responses and the faculty responses to see if there was a significant difference between the responses of the two groups.

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In the identification of whether or not a critical issue was perceived as existing, the "yes" responses of students and faculty to each issue were cross tabulated and chi-square tests were performed to determine if there was a significant difference in the two sample's perception. Testing at .02 to avoid all Type I errors, **only one statement showed a significant difference in the proportion of "yes" respondents.** Statement 20, which said **"For on-line courses to be effective, class size must be restricted.", faculty (84%) were significantly higher than students (52%).** It is the researcher's opinion that there was a significant difference because faculty are much more concerned about workload issues, class preparation and faculty overload than are the students who are taking the class.

After obtaining the weighted satisfaction mean of both populations, a chi square analysis was then conducted of the observed weighted satisfaction means. **Setting the degrees of freedom at 1, and using $p < .02$, there was no significant differences found between the faculty and the student respondents on any of the statements.**

Although the research results indicated overall satisfaction with the on-line services and instructional delivery, the faculty respondents expressed low satisfaction level on adequate program planning time allowed for on-line courses and on the funding available to develop on-line courses and allow for technology upgrades. In addition, faculty respondents did not feel they had received adequate release time to develop these courses, nor where they satisfied with the training they had received to instruct on-line courses.

The study did not address quality issues and the student participation return was very low. Further research is needed to address faculty and student satisfaction, for example, whether students would enroll in other on-line courses and whether faculty would teach other internet

courses. Further research is also needed on retention of on-line students, benefits of orientation for new students, and tuition and security issues for on-line instruction.

Dedication

This document is dedicated to my family, without whose support the completion of this project would not have been possible, especially to my husband, Charles, who became mom, maid, cook and dad, to give me a chance to fly. To Kathryn and Kristin, who always believe in their mom, and to Mama Bonnie, who was always there to help. To my mom and dad, who always encouraged me to try. I owe each of you so much, but most of all, I will never forget your faith in me.

BIOGRAPHY

Mary Powell Kirk was born in Tryon, North Carolina on January 15, 1954, and received her undergraduate degree in office administration from the University of North Carolina, Greensboro, North Carolina. Following her undergraduate study, she was employed by a private hospital for seven years in Greensboro, one year with a law firm in Beaufort, North Carolina, and began her educational career with Carteret Community College, Morehead City, North Carolina as administrative assistant to the President.

The community college employment led her to pursue studies in the educational field at the graduate level. While maintaining full-time employment, she completed a Masters of Education in Adult Education at East Carolina University, Greenville, North Carolina and then entered the Adult and Community College Education program at North Carolina State University. While continuing her studies, she became Assistant to the President for Development and Personnel, and during her last two years at Carteret Community College, she was the Dean of Instruction. She currently is President of Montgomery Community College, Troy, North Carolina.

Professional memberships include American Association of Women in Community Colleges, American Association of Community Colleges; North Carolina State Employees Association; Women Administrators in North Carolina Higher Education, North Carolina Association of Community College Presidents, and the Council of Resource Development Officers.

Mrs. Kirk has completed leadership institutes with North Carolina State University and two county leadership programs, Leadership Carteret and Leadership Montgomery. Civic and community activities include Trinity United Methodist Church, Rotary, Montgomery County Chamber of Commerce Board, Montgomery County Economic Development Council Board, Montgomery Community Theatre Board, Committee of 100 Board, Montgomery County Partnership for Children Board, Montgomery County Youth Leadership Montgomery Board; Trinity Music Academy; Governor's Vision 2030 Knowledge and Technology Task Force, and a state alcohol awareness/employee assistance task force.

Past awards include the Geoffrey Tennant Scholarship, Tryon, North Carolina, 1971; Kiwanis Award, Tryon, North Carolina, 1971; Kathryn J. Reynolds Scholarship nominee, 1971; Carteret Community College Meritorious Service Award, 1996; American Business Women's Association "Business Associate of the Year", 1997; Carteret Community College Association of Educational Office Professional's "Administrator of the Year, 1997; and the Governor's Award for Outstanding Volunteer, 1997.

She is married to Charles Thomas Kirk and they have two daughters, Kathryn Louise Cloniger-Kirk, age 15, and Kristin Anne Kirk, age 10.

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I would like to thank all of my committee members, Dr. Ray Taylor, Dr. Conrad Glass, Dr. John Pettitt, Dr. James Burrow and Dr. Donald Reichard for their patience and assistance in this project. A special thanks is due Dr. Glass and Dr. Reichard for their assistance and counsel during the latter part of this process. A special thanks is also due Dr. Edgar Farmer, who has remained a friend and cheerleader during this process.

A very special thanks to Dr. Taylor for his prompt and always meaningful responses to my many questions. He has a spirit that is admirable and unfailing, and his outlook on life is steadfast and strong. My support system during this project was also composed of many of my graduate friends and colleagues at both Carteret Community College and Montgomery Community College. Special thanks are due to Dr. Donald Bryant, Ms. Joyce Smith, Ms. Hollie Gaskill, Ms. Brenda Ritter and members of both boards of trustees at Carteret and Montgomery. Their faith in me was never ending and I am grateful and indebted to them all.

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CHAPTER 1

INTRODUCTION

The North Carolina Community College System (NCCCS), founded in 1963, currently consists of 59 community colleges. The programs of study have evolved from primarily two-year vocational and technical programs to a system that also offers college transfer, and adult basic skills and literacy programs. With the exception of telecourse offerings, the majority of the courses have been offered in the traditional classroom setting.

The rapid and constantly advancing capabilities of computer technology opened the door for internet courses, and community colleges are now enrolling and educating students through this delivery system. Many issues have arisen concerning internet courses and include:

- Adequate program planning and development, both institutionally and system-wide;
- Leadership for the future;
- Funding for course offerings;
- Accountability - performance-based;
- Technology infrastructure;
- Effectiveness of instruction;
- Enrollment credit for students;
- Release time for instructor(s) to develop the courses;
- Instate versus out-of-state tuition; and
- Security measures for individual courses (NCCCS, 1998).

As community college educators branch into on-line delivery of courses, there are unanswered questions regarding the critical issues that might affect this form of instruction. The goal of this study was to analyze the effectiveness of on-line instruction by researching the offering of an internet course and assessing the issues surrounding internet offerings. This study included a literature review that investigated:

- The foundation upon which the North Carolina Community College System has built its course offerings and how it has evolved to the instructional technology and strategies of today, including the organizational and administrative concerns in dealing with this growth;
- The adult learner and his or her diverse learning needs in relation to on-line delivery of instruction; and
- The planning and programming process necessary for proper development of internet courses to include evaluation.

Significance of the Study

This study was significant because it discussed issues affecting the delivery of on-line instruction and gathered information concerning the satisfaction of students and faculty with on-line instruction. Community colleges in the North Carolina system must adhere to common course library standards for curriculum course offerings. Within these standards are written competencies that the instructor must teach and the students must be tested based upon these competencies. Many schools currently undergoing self-study for the Southern Association for Accreditation of Colleges and Schools (SACS) have reported that SACS is very concerned about

the quality of distance learning instruction and if said instruction meets the same quality control as traditional course offerings.

Statement of the Problem

Based upon the identified critical issues cited earlier, the central question for this study was to assess the extent to which community college students and faculty agree on the importance of and satisfaction with the cited critical issues in relation to the delivery of on-line instruction. A survey instrument was developed and piloted to measure student and faculty perceptions of these issues as they applied to their own experiences. In addition to determining the relative importance and satisfaction of these issues, students and faculty were asked to identify whether or not these issues existed on their campuses.

One instrument was developed to survey both populations, with the sample including students and faculty from Carteret Community College, Fayetteville Technical Community College, Johnston Community College and Montgomery Community College. The questions were designed to assess the following:

- the perception of the student and the faculty member concerning whether an identified critical issue is important in affecting on-line instruction;
- whether the student/faculty member feels the issue exists at their campus/institution; and
- the student/faculty member's rating on their personal satisfaction with the on-line instruction that exists at their institution in relation to the critical issue.

A pilot test was conducted to assess the validity of the questionnaire, with a cover letter explaining the intent of the survey. Following the pilot test, the sample population was contacted

by cover letter with the survey attached. The non-respondents received follow-up notice, and finally the data were analyzed.

Hypothesis

A null hypothesis was developed for each survey statement, resulting in twenty-two (22) hypotheses. Each null hypothesis is listed as follows:

1. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of orientation sessions in preparing the student for the internet class.
2. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of on-line registration for on-line courses.
3. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of adequate program planning and development for on-line courses.
4. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction of cost effective on-line courses.
5. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of comprehensive testing, adequately measuring student proficiency.
6. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction with sufficient technology to support on-line courses.

7. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction that adequate funding is available for development of on-line course(s) and upgrading technology.

8. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line courses demonstrate comparable academic rigor as traditional courses.

9. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that appropriate links for study materials support the course competencies.

10. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the same tuition rate should be charged for in-state and out-of-state students.

11. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that security measures for on-line courses are adequate.

12. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.

13. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students must be self-directed and motivated.

14. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that faculty are properly trained to instruct on-line course(s).

15. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line delivery of course results in unnecessary course duplication.

16. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that faculty are given adequate release time to develop on-line courses.

17. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that student questions are responded to in a timely manner.

18. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the instructor's responses to students are informational.

19. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.

20. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that for on-line courses to be effective, class size must be restricted.

21. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students have access to comparable student services, i.e., library resources.

22. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students are at greater risk to drop the course.

Limitations

The samples for this study included four community colleges in North Carolina: Fayetteville Technical Community College, Carteret Community College, Johnston Community College and Montgomery Community College. This sample was selected so that a study could be made of students and faculty from two rural colleges and two urban colleges providing courses taught through on-line delivery. Students and faculty participating in internet course delivery were to be surveyed for this study at all four colleges. However, despite two separate attempts and numerous reminders and calls to the information technology department, there were no responses from the student sample at one of the colleges. This lack of response limited the number of respondents who participated.

Finally, this was a broad-based study on early satisfaction with internet instruction. There was low student participation and the issue of quality was not addressed. Although the research shows overall satisfaction with internet course delivery as addressed in this study, further research is needed to address faculty and student satisfaction, for example, whether students would enroll in other on-line courses and whether faculty would teach more internet courses.

Further research is also needed on retention of on-line students, benefits of orientation for new students, tuition, and security issues for on-line instruction.

Definition of Terms

Computer Conferencing - interactive computer-based communications environments where participants converse via keyboard with other students currently logged on an application. (Franklin, Yoakam, Warren, 1995).

Distance Learning - the delivery of instruction when teachers and learners are separated inplace and/or time, is currently being shaped by microcomputers, the Internet and the World Wide Web (Kerka, 1996).

Electronic Mail - delivery of messages via the internet.

Information - the communication or reception of knowledge or intelligence (Webster's Third New International Dictionary, Unabridged, 1986.

Interaction - action on one another; reciprocal action or effect (Webster's, et al., 1986).

Internet - computer network interconnecting countries of the world (Hart, Reed, and Bar, 1992)

North Carolina Community College System - the system office overlooking and providing direction for the 58 colleges and the Center for Applied Technology in the state of North Carolina.

Technology - the system by which a society provides its members with those things needed or desired (Webster's, et al., 1986).

Telecourses - courses of televised lectures offered for credit by colleges or other schools (Webster's, et al., 1986).

CHAPTER 2

REVIEW OF THE LITERATURE

The study included a literature review that encompassed a history of distance learning; policies and procedures used by other community colleges in the North Carolina system in regards to internet instruction, its effectiveness, the perceptions and attitudes of both faculty and staff in regards to internet instruction, student and faculty satisfaction, and the design/program planning of distance learning from registration to the final examination.

The Foundation of the North Carolina Community College System and Development of Distance Education

Verduin and Clark (1991) defined distance learning as "any formal approach to learning in which the majority of the instruction occurs while educator and learner are at a distance from each other" (p. 8). Distance learning, as an alternative to traditional classroom delivery of instruction, dates back as far as the mid-1800s when correspondence courses were introduced (Lever-McDuffy, Johnson and Lemke, 1996). Americans who lived in isolated areas completed correspondence courses to accomplish their educational goals. Since then, access to instruction has been the major drive behind distance learning and has evolved through radio, television, videocassettes, satellite links, telecourses and now internet courses.

Community colleges have been investigating new technologies available for student access and internet course delivery for a myriad of reasons: declining enrollment, reduced resources, remaining competitive with course offerings, and addressing the needs of students

who cannot attend traditionally scheduled classes on campus. Community college students, at an average age of mid to late twenties, generally have economic responsibilities for themselves and/or a family. Due to these responsibilities and work schedules, distance learning provides an alternative method to improve their skills to keep or upgrade their employment. Distance learning allows them to take classes more often at their convenience. (Lever-McDuffy, et al., 1996).

The advantage of personal computers combined with modems and a telephone line added a new window to distance learning delivery, making the learning more interactive. Suddenly, synchronous learning, characterized by two-way communications and bound by time and place is partnered with asynchronous learning, characterized as intermittent, as-needed communication, conducted at the leisure of the teacher and the student (Lever-McDuffy, et al., 1996). But how did education evolve to this level of educational opportunity?

History of the Development of Distance Education in the North Carolina Community College System

As a brief overview for the development of the North Carolina Community College System, its history began with the establishment of tuition free junior colleges in 1927. In 1949, the General Assembly established the Hurlburt Commission to study recommendations by Dr. Clyde Erwin for the creation of community colleges (Wiggs, 1989).

The Hurlburt Commission's recommendations to establish a community college system were defeated in the General Assembly in 1953. In 1957, legislation authorizing the development of industrial education centers was passed, the Carlyle Commission was established

to again study higher education and in 1963, a similar recommendation to establish a community college system was accepted by the General Assembly (Wiggs, 1989).

With the passage of the Community College Act of 1957, the control was given to the newly created Department of Community Colleges, which still answered to the State Board of Education. It was not until 1981 that the State Board of Community Colleges was established and remains the governing body of the North Carolina Community College System (Wiggs, 1989).

In 1969, state legislation was passed, stating the major purpose of the community college system was to offer technical and vocational programs in addition to college parallel and adult education programs. Individual trustee boards were established to govern each college, removing the control from the local boards of education.

All of the colleges were regionally accredited by 1978-79 and all had permanent campuses. In reference to the different names carried by the various colleges, Wiggs (1989) indicated that community colleges distinguished themselves from a technical institute by offering the college transfer program. Throughout these changes, the charge to the colleges was to continue offering vocational, technical, college transfer and adult education courses.

Course Delivery Via Telecourses

Central Piedmont Community College in Charlotte offered the first instructional telecourse for the North Carolina Community College System during the mid-1970s. This course was offered in partnership with the Mecklenburg County Public Television station (Manley, 1989). In August, 1989, the North Carolina Consortium for Instructional Telecommunications

(NCCIT) was formed, composed of public community colleges working cooperatively to provide distance learning. The first telecourse sponsored by the NCCIT aired in September, 1980 by the UNC Center for Public Television (Manley, 1989).

Manley (1989) reported that by the mid-1980's, 29 of the 58 community colleges had offered at least one telecourse and in January 1988, the NCCCS President appointed the Telecommunications Planning Group. This group was charged with reviewing telecourse technology and offered one main recommendation: developing policies that would detail the specifics of a statewide, dedicated, community college telecommunications system (Manley, 1989).

In 1989, the Commission on the Future of the NC Community College system issued its report, "Gaining the Competitive Edge: The Challenge to North Carolina's Community Colleges." This report challenged the community college system to remove barriers restricting student access, that new technologies required instructional changes, and that colleges should encourage innovative teaching methods and curricula. To increase incentive for colleges to implement telecourse technology, NCCCS agreed to pay the license fees for two telecourses for the 1989-90 academic year. Currently, twelve instructional telecourses can be broadcast per semester at each college (Manley, 1989).

In a study conducted by William Blanchard (1989), he found that telecourses

- were as effective as traditional courses;
- were superior to correspondence courses;
- provided greater access for students; and

- forced the instructor(s) to take a very disciplined and rigorous organizational approach to facilitating/instructing the course (Blanchard, 1989).

Course Delivery Via Internet

Garrison (1989) predicted "to increase the range of choice and opportunity for learning, a third generation of distance education is on the horizon. It is based upon the most promising and pervasive information processing advancement of this century - the microcomputer" (p. 225). Garrison continued that with this new technology, distance learning will allow learners to study when, where and how they wish to learn, giving the learner the maximum control over their educational path.

Martin (1997) stated that the "Internet can and will be an incredible information and communication tool for empowering adults in the 21st century and helping people worldwide join together in creating a better society--if we can get by the barriers of access, training and computer-phobia" (p. 1). He discusses the many sources available through the internet, including information collections, learning communities, guides, tutorials, games, simulations, web page construction and learning centers, and how they can be of benefit to the adult learner.

According to Rosen (1996), the internet provides learners and teachers with the learning resources in two primary areas: research and communication. Both learners and teachers can communicate through networking with peers, exchange information and knowledge with others in their fields, and gain access to national, state and local information about their area of interest. Rosen (1996) continued that in the area of research, learners and teachers can use the internet for publishing, search for job and career advancement, entertain themselves as well as provide

linkages for self-education resources anywhere in the world, and as a tool for collecting lessons and interactive opportunities for students.

Bicanich, Hardwicke, Slivinski and Kapes (1997) did a pilot study on internet testing in Pennsylvania and reported that students actually preferred testing on the internet to paper and pencil versions by a three to one margin. The advantages of internet testing include immediate results and analysis of the data and reduced costs. However, Bicanich, et al., identified a number of critical issues:

- Performance and attitudes toward internet tests compared to paper-and-pen tests;
- Privacy and security issues;
- Internet delivery of testing; and
- Pursuit and successful implementation of internet-based testing (Bicanich, et al., 1997).

The study found that delivery of a test via the internet did not affect student performance, most students preferred internet testing, and there was less time required by the test administrators for preparation and data analysis. Their final conclusion was that because of the immediate availability of results, along with the students' preference for internet testing, the potential for educational benefits went beyond just costs savings. It was also noted that the one limitation to cost savings is the lack of familiarity and training on the part of teachers with the internet (Bicanich, et al., 1997).

Organization and Administration Preparation for Internet Instruction

White and Belt (1980) cite Robbins (1976) who said that "those who have the responsibility for deciding the direction an organization will take, and who hold the authority to

move it toward its goals are the single most important ingredient in determining the organization's success or failure" (p. 216). To be successful in a leadership role, one must be aware of the organizational culture, and understand how to work within the culture to accomplish the goals and objectives of the institution.

If the leader is not aware of the environment and of the followers' attitudes toward distance learning and the development of internet courses, accomplishing the institutional goals may prove difficult. For example, several members of the Carteret Community College Board of Trustees stated their wish for courses to be developed, and immediately, if possible. Although several of the faculty were enthusiastic and ready to proceed into this new technology, resistance by the majority of the faculty occurred. Their concern was lack of planning and design, unanswered questions about release time to develop the courses and budgetary earnback, funding to cover instructors for the additional classes, fear and uncertainty about the technology, and lack of communication concerning the motivation for this new direction (Keough, 1998).

By employing more participatory leadership styles and allowing the faculty to express their concerns and suggestions, the benefits would (Yukl, 1994):

- increase the quality of the decision;
- increase commitment to the decision;
- offer less resistance to administrative efforts;
- allow groups will be become empowered and more self directed;
- let the group have a greater understanding of the decision to be made; and
- increase team building and transformational leadership.

Verduin and Clark (1991) stress the importance of communication during the design process of distance learning. They believe that the "philosophical position of the institution will dictate the nature and quality of the institution's distance learning program" (p. 171). Educators would prefer a more student-centered model, while economics may call for a more institution-centered model, needing a larger number of students and more control. White and Belt (1980) stressed the importance of long and short-range planning, and that the failure to establish goals can lead to defective leadership.

Distance Education Program Foundation

Verduin and Clark (1991) presented a conceptual model for distance education that begins with the separation of teacher and learner. Based on that separation, Verduin and Clark (1991) proposed three dimensions within this model, the first called dialogue and support. In this hierarchy, the skills build upon each another and are necessary for a learner to be successful in their learning goals. To be successful in this first dimension, the hierarchy of skills (Figure 1) was discussed.

Verduin and Clark continued with the second dimension called structure/specialized competence. Certain programs require more formality than others, an example being the progression from algebra to statistics. Accordingly, a highly structured field requires more specialized learning than a low structured field. The third dimension is general competence/self-

Figure 1

Verduin and Clark's Conceptual Model For Distance Learning

Skill in Research		
⇑		
Ability to write well	⇒	plays a big role for interaction in distance learning
⇑		
Skill in independent study	⇒	necessary to succeed in non-supervised distance learning
⇑		
Skill in discussion	⇒	basis of learner-centered discussion

directedness. The point made by Verduin and Clark is that although the learners may be highly motivated, they may still seek out a highly structure program to meet those professional needs. Using these three dimensions, Verduin and Clark felt that the following mixtures and combinations shown in Figure 2 would best serve distance learners:

Figure 2

Case 1: low dialogue/support
high structure/specialized competence
low general competence/self-directedness

Case 2: low dialogue/support
low structure/specialized competence
high general competence/self-directedness

Case 3: low dialogue/support
high structure/specialized competence
high general competence/self-directedness

In reviewing these three cases, the low dialogue and support might be expected with the internet course. However, the prepared course(s) could either be high or low structured when dealing with a specialized competence and could be high or low within the general competence and self-directed behavior. A review of adult learners, their needs, experiences and expectations will now be discussed.

Adult Learning Needs

A broad base of individuals is served by community, technical and junior colleges and includes "individual citizens, families, business and industry groups, local governments, and numerous community agencies" (Shearon and Tollefson, 1985). The common theme is that adult learners enrolling in programs at the community colleges are from all walks of life and are enrolling for a myriad of reasons.

Dolence and Norris (1995) reported that there were 12 million current learners in the United States. The new learners available in the Information Age, United States only, is 20 to 28 million. The new learners in the Information Age globally are 100 million plus. Who are these learners and do we know what they want to learn and how?

Shearon and Tollefson (1985) said that community colleges continue to see an increase in part-time students, and a higher proportion of that increase is made up of women and older adults. Theories of learning for adults must also be understood when planning for a new method of instructional delivery. These theories represent different orientations and the four basic ones, behaviorist, cognitive, humanist, and social learning, must all be understood and acknowledged

when planning internet instruction. Under the behaviorist orientation, three assumptions are made: learning is observed through a change in behavior, learning is affected by one's environment, and contiguity and reinforcement are necessary for the learning process (Merriam and Caffarella, 1991).

Other factors in the learning processes of adults are age and intelligence; memory, cognition and learning styles; social and political issues; and learning as a formal or a self-directed activity. Merriam and Caffarella (1991) address self-directed learning and defined this activity as "a form of study in which learners have the primary responsibility for planning, carrying out, and evaluating their own learning experiences" (p. 41). They felt that many variables determine how adults learn on their own. These variables include life circumstances, life-long experiences and acquired knowledge, learner motivation, and learners' ability to locate needed resources either through personal research, working with experts in the field or simply through their acquaintances and friends. Self-directed learners do not follow a set path or format to accomplish their goal of learning.

Cross (1981) found that the most commonly cited barriers for adult learning are cost and lack of time. She groups barriers as either situational, dispositional, or institutional. The situational barriers include costs of instruction and work or family life, while institutional barriers include lack of support and informational services, prerequisites to the preferred course of study and the frustrating red tape involved to take a course. Dispositional barriers would include the adult learner's preference to take a course traditionally, thus ruling out the benefits of a distance learning class.

The framework for adult learning is also well explained through Cross's Characteristics of Adults and Learners (CAL). This theory explains that adults learn differently from children because of their physical lifespan, their psychological and sociocultural experiences and the motivation of adults as self-directed learners. She notes that anytime there is a change in the life role of an adult, that change has a strong impact for additional learning (Cross, 1981).

Verduin and Clark (1991) outlined the adult characteristics for distance education learners. The ability to choose the time and place of an adult learning experience appeals to working adults. The traditional affiliation of distance learning has been associated with adults and the literature about distance learning is targeted to adults. The study traits to succeed at distance learning are more typical of an adult, who has the ability to be more self-directed and internally motivated (Verduin and Clark, 1991).

Dolence and Norris (1996) identified that learning in the information age must be highly individualized. They present discussion concerning the transformation of education so that instructional strategies are learner-centered, self-paced to meet the needs of the learners, and allow the learners to accomplish their personal best through their own best style of learning. Instructional strategies must also provide simulation research, greatly reducing the cost of instruction and improving quality.

The needs of the learners can also be met by "reconceptualizing the role of the Information Infrastructure, creating barrier-free, perpetual learning; offering high-quality, flexible enabling services; reconceptualizing around essential outcomes; pushing out organizational boundaries using technology; designing new organizational interfaces with learners, and

changing the metaphors for realigned redesigned learning organizations" (Dolence, et al., 1995, p.33).

Chattanooga State Technical Community College began its distance learning program in 1980 when a fixed television system was constructed. Following an analysis of their programming, it was found that although over 1000 students were enrolled in distance learning, only 326 of the students were taking just distance learning courses and not also enrolled in course offerings on campus (Miller, Hyatt, Brennan, Betani, Trevor, 1996). The college analyzed this defined group of students to see if there were any particular reasons for the students enrolling only in distance learning offerings. The findings include five "niche" groups experiencing particular barriers to traditional course offerings:

- Handicapped Students;
- Power Line Maintenance Technicians;
- Emergency Service Personnel;
- Truckers; and
- Industrial Maintenance Workers in small companies.

All five groups had special needs either because of difficulty for individual students to reach campus, or because of the type of career, and the inability to come on campus during particular course offerings.

The North Carolina Community College System (1993) reported that students are time and place bound and that "the main reason that students enroll in distance education courses is CONVENIENCE." The definition of time bound included those students who work shifts, who travel a great deal, or because of home and/or professional responsibilities, do not have time for

regular classroom attendance. Place bound was defined as students living too far from campus, students who are immobile because of illness, disability, or students confined in a hospital or prison. Yet, in meeting the needs of students, including the convenience in participating in a course, the issue of adequate training for the instructors still remains to be addressed (North Carolina Community College System, 1993).

The California Postsecondary Education Commission (1991) was directed by the California Legislature to:

> "consider issues of funding and management of intersegmental distance learning efforts, course credit transfer, qualifications and credentialing of instructors and on-site personnel, ensuring course quality, and other policy issues associated with distance education, as well as compile research on the effectiveness and cost-effectiveness of distance instruction at various levels of education" (p. 1).

In addition, the Commission was charged to develop a proposal for delivering instruction over a distance with an emphasis on the following types of services:

- programming to meet the needs of high-risk students would might otherwise drop out of traditional programming;
- course offerings to include foreign languages, mathematics and science, particularly to inner city and rural secondary schools that cannot provide college preparatory courses;
- expanded offerings to include college level courses to rural community colleges and off-campus centers, better serving students living in remote parts of the state;
- professional development offerings for secondary teachers; and

- enhancement of curriculum through the broadened communication abilities between schools, colleges and universities (Commission, 1991).

The Commission saw the potential for offering every secondary student a chance at quality education for every required college preparatory course; the opportunity to meet the needs of industry and a trained work force; to provide access without having to build new campuses or off campus centers; to conquer California's shortage of qualified teachers by sharing teachers through distance learning; to address and provide literacy, language and citizenship instruction to those special populations in the state needing such training; and to make available professional development to all teachers and administration regardless of their location within the state. The Commission concluded that distance learning is cost-effective, academically equal to traditional instruction, more effective in remote settings, that an effective administrator is crucial, the facilitators must be well-prepared, and most importantly, that the learners reported positive feedback stating that they had "exposure to a greater range of ideas, peers, and teachers, and the need to take a greater responsibility for their learning" (Commission, 1991).

The California System of Community Colleges studied the barriers experienced due to the expanded use of distance learning in California. These barriers included lack of a funding base for the technological infrastructure, lack of funding structure to encourage institutions to develop quality programming, lack of staff/faculty training, transfer agreements that do not recognize distance learning credits, no added incentives to encourage faculty to teach distance learning, and no financial planning for distance learning instead of all funding for new buildings, off-campus sites, etc.

Program Planning Process

In planning for distance education, the programming and planning tools similar for planning a traditional course apply. Noted program models include Boone (1966), Dolan and Shearon (1971); Boyle (1981); Friere (1970); Knowles (1970); Tyler (1971), and Boone (1985) as cited by Boone (1985). These educators' models are drawn upon their particular point of reference such as Friere's humanistic approach, Boyle's cooperative extension experience and Boone, Dolan and Shearon's concentration on extension students. The similarity in models, however, involve the following steps to be accomplished: program and need identification, objectives, goal setting, formal and/or informal learning activities, and evaluation.

Boone (1985) expanded the study of his conceptual planning model to include three basic areas: planning, design and implementation, and evaluation. Within each of these basic areas, he broke the process into subprocesses and clearly defined the appropriate steps to be taken to effectively design a program. The two dimensions for the planning phase are as follows:

The organization and its renewal. Under this dimension, it is important to clearly understand the organization's mission, philosophy, and objectives; the roles and relationships in the structure of the organization; the skills and the processes of the organization; understanding and commitment to a conceptual framework for programming; and, being committed and concerned about the organization's continuous renewal. Without a complete understanding and working knowledge of these five subprocesses, program planning will not satisfactorily address the organization's needs.

Linking the organization to its publics. This second dimension is one of the more crucial steps and involves seven processual tasks - studying, analyzing and mapping the organization's publics, identifying target publics, identifying the formal and informal leaders and effectively tying them into the planning, assessment and identification of their needs (Boone, 1985). To garner the information needed about the target publics, the program planner must be aware of the factors contributing to those needs: physical, psychological, social, cultural, economic and political. Next in importance is the ability of the planner to gather the information through environmental scans, community studies, census and population data, and listening and interacting with the leaders of these target publics. Being able to take the needs identified by the formal and informal publics and translating/organizing them into macro needs and objectives is crucial. If these tasks are followed sequentially, the program developer will become acquainted with the social and cultural environment within which the organization functions and have the tools to appropriately map the organization's publics (Boone, 1985).

Continuing with the processual tasks, the developer would then be able to identify these publics, to identify the formal and informal leaders, to be armed with the abilities to interface with those identified leaders and to have the skills to collaborate with the leaders and followers. Again, without this planning phase, the community will not feel ownership, and in some situations, will not support the organization in its program design and plan (Boone, 1985).

Langenbach (1988) further observes that to gain the attention, commitment and interest of the targeted group and change their behavior as the result of the educational program, the program has to be based upon the group's needs. The positive effects of such linkage will result in a positive collaboration, and will motivate and obtain firm commitments from the target

publics and the stakeholders, along with their trust. In addition, the education and all the stakeholders, by sequentially following the processual tasks in the planning subprocess, will have developed the macro felt need(s) so that there is a logical shift to the design and implementation subprocess.

Design and Implementation of the planned program. Boone (1985) outlines eight basic assumptions that guide the design and implementation subprocess. These assumptions state that the planned program:

- is the means of responding to the publics' needs;
- is the blueprint for behavioral change;
- provides a rational for the use of its resources;
- provides direction for strategic decision making;
- is an excellent public relations tool;
- guides the development of the change strategy;
- can be used as the means of marketing; and
- will identify resource personnel to assist with problem implementation (Boone, 1985, p. 129).

Boone (1985) continues that the design and implementation "subprocess involves translating the identified and analyzed learning needs of target publics into meaningful and cogent designs and developing effective teaching-learning strategies" (p. 130). This translation of needs into learning designs and strategies occurs in three dimensions: the planned program, plans of action and action strategies.

The planned program consists of stating the macro needs, stating the macro objectives which are related to the macro needs, specifying strategies for meeting the macro objectives and delineating macro outcomes of the program. The final two processual tasks in the planned program establish a time frame for completing the program and a framework for evaluating the information gathered. From this identification, the learning activities and instructional strategies can be planned. The implementation includes taking the needs and developing the competencies for the course to include specified learning experiences and a method of evaluating the learner's experience, marketing the planned program, recruiting qualified teachers and other resources, and devising a method of monitoring the learning activity.

The plan of action involve strategies to guide the adult educator toward meeting the learner's needs and meeting the objectives set forth in the planned program. The third dimension involves action strategies, which when selected and carried, will further the success of the program. These action strategies include marketing, finding the necessary resources, monitoring the relationship between the teacher(s) and the learners, supporting the learners and the teachers, and evaluating through feedback (Boone, 1985).

Under **evaluation and accountability**, there must be an evaluative method for measuring the outcome of the program, and relating the success of the program back to the interested formal and informal groups. The evaluation process will determine the impact of the program, assess the effectiveness of the program, both through program input and cost effectiveness and will demonstrate accountability to the stakeholders (Boone, 1985).

To properly evaluate, formative evaluations must be developed and conducted to focus on program improvement, while summative evaluations are developed and administered to measure

and access the outcomes of the educational program. Effective evaluations must also be carefully planned, drawing questions in relation to the program objectives, the students' reaction to the program, the impact of the program on the community, and the policies and procedures of the education program (Sork and Caffarella, 1981).

Internet Course Planning and Development

Similar steps described above must be taken when developing an internet course. Attention must be given to instructor preparation to develop and instruct an internet course. McKenzie, Mims and Davidson (1995) stressed seven areas of concern for distance education instructors:

- Initial preparation and training. Their recommendation was that training for an on-line class should start at least one quarter before the beginning of the class to include observation of a class, reading about the copyright laws and technical setup needs; practicing the lessons followed by an assessment of that lesson and collecting materials for use in presentations.
- Preplanning for actual teaching to include course outlines, backup plans for emergency needs including a telephone and getting to know the distance class facilitators.
- Planning the organization of class time to include efficient planning of time for each class, making sure equipment is operational, using a variety of small group activities, and planning for handouts and visuals to be available at possible off-campus sites.
- Effective teaching strategies, including good communication skills and strategies, feedback to students, cues to students for certain class activities, beginning on time, use

of electronic mail, phone or fax for individual student contact, making the students aware of expectations and using good visuals.

- Interpersonal communication behaviors to include voice tone, inflection, grammar, discriminating humor, encouraging dialogue between students, allowing students to assess their own perceptions about the distance learning, and providing them with content reviews throughout the class.
- Student preparation and methods of assessment and evaluation. Encourage the students to participate, find out how familiar the students are with distance learning, and let the students know how they are expected to participate in the class (McKenzie, Mims and Davidson, 1995).

The above emphasis centers around the instructor taking the time to become familiar with the steps necessary to make distance learning effective.

Franklin, Yoakam, Warren (1995) authored a distance learning guide through a grant provided by the Indiana State Board Reserve Funds. Much like the North Carolina system's curriculum improvement projects (CIP), these educators researched and formulated a planning and implementation guide for distance learning. The key issues they felt should be addressed were needs assessment for distance education, proposed selection of media, the design and implementation of the distance learning system, proper management of the distance learning system, and adequate training of the personnel to teach through this system and appropriate evaluation (Franklin, et al., 1995). Based upon the above six issues, these educators developed a comprehensive guide for planning and implementing distance education courses.

Cost-effective continual training and retraining for business and industry were cited as reasons for the importance of distance learning. Although retraining for seventy-five percent of the United States' workforce is anticipated over the next ten years, the funding projection reflects a continued shrinking of educational institutions' budgets. Through distance learning, learners can be linked with faculty resources through multiple sites and provide education normally unavailable (Franklin, et al., 1995).

Lever-McDuffy continues about the importance of curricular revision for distance delivery and discusses the three differences between curriculum design for distance environments and the classroom. The first difference is the extra care and advance planning needed to develop and/or select instructional strategies for the learner. Secondly, the identification of support technologies may require extensive review and evaluation of technological options. Finally, formative and summative evaluation methodology for distance learning must be developed (Lever-McDuffy, Johnson and Lemke, 1996).

Thach and Murphy (1995) further pointed out that traditional teaching techniques will not work in distance education settings. Staff development is needed so that distance education instructors understand a much greater concentration must be centered on the learner. The development of instructional strategies for distance learning requires careful orchestration. The students are not physically there to demonstrate the known cues for understanding the material or being confused about the lecture. Distance instruction must be planned so that the learner does not experience confusion or isolation, and the delivery of the information must include strategies for a diverse population. Institutions must plan for staff development so that instructors can be trained in these new strategies.

The second difference is the variety and complexity of the available technologies. Many faculty members are not aware of how to set up an internet course and become easily frustrated when attempting this task. Again, training must be available to the faculty so that they may evaluate the technologies available and access the most suitable tools for their instructional program. Finally, as in all program planning, evaluation of the distance learning curriculum is paramount to continued success. New strategies must be developed as the students will not be readily available for assessment. The worst scenario is throwing a distance learning course together, frustrating those enrolled to the point they withdraw from the course, causing both the college and the student to lose (Thach and Murphy, 1995).

Klus, Stremikis and Hoyman (1995) reported that "developing learning materials for Internet delivery takes more time and effort than we first expected" (p. 5). They found that archival management of their learning materials was critical, including document management, and maintenance of ASCII master files. Without adequate equipment, it is difficult to accomplish the task.

Carteret Community College Internet Course Model

Carteret Community College offered its first internet course in the 1998 Spring Semester and offers a professional development course "How to offer a course over the Internet?: A model at Carteret Community College (CCC)" (Shearin and Keough, 1997). As a part of the planning process, each instructor, prior to the start of the development of any course must either be proficient or have access to an instructional designer who is proficient in a word processing package (WordPerfect, MS Word, Claris Works); the use of Electronic mail (NCCCS

GroupWise, Eudora Light or MS Exchange; an HTMP editor (WebWizard, AOLPRESS or MS FrontPage); and a computer conferencing package.

The college's model emphasizes that the college should:

- Provide technical support for the instructors and the proper software to be used in delivery of the instruction;
- arrange for electronic mail accounts for instructors and students - a student electronic mail server, free web-based electronic mail accounts; and
- Arrange for internet access for instructors and student.

The CCC model continues that support staff should be provided to advise and coordinate the instructor on

- a homepage for office hours;
- course development;
- material on proper internet etiquette;
- evaluation, research and citation of electronic resources;
- links to course materials on the Web;
- HTML coding of information such as papers, student assignments, graphics and visual aids to be posted to the Web; and
- audio materials such as interviews, discussions, speeches, and lectures (Shearin and Keough, 1997).

Organizationally and administratively, groundwork must be laid to include movement toward electronic registration, advising, counseling, assessment, mentoring, and monitoring or student progress. Fiscal and administrative planning of such changes must be a part of the

planning process and not implemented when it becomes evident that students not only wish to take courses on the internet, but handle all other concerns through the same method of communication. In addition, the Southern Association for Accreditation of Colleges and Schools requires the comparable services be offered for students taking distance education.

To actually create an internet class, the college uses the following instructional design model which is divided into five general phases- analyze, design, develop, implement and evaluate (Shearin, et al., 1997).

The analysis phase is the foundation for all the other phases. Within this phase, the problem must be defined, the source of the problem must be identified and possible solutions must be determined. Needs analysis, job analysis and task analysis are all recommended, the output of which will include the instructional goals and a list of tasks to be instructed. Thus, the outputs become the inputs for the course within the design phase.

The elements of the design phase include writing a target population description; writing objectives and test items; selecting a delivery system and getting instructional materials in sequence. The development phase will then build on both the analysis and design phase and will generate the lesson materials and plans to include the instruction, the media to be used, and the necessary supporting documentation (Shearin, et al., 1997).

The implementation phase is the actual delivery of the instruction with the purpose being effective and efficient instruction. This phase should promote "the students' understanding of material, support the students' mastery of objectives; ensure the students' transfer of knowledge form the instructional setting to the job" (Shearin, et al., 1997, p. 7). The evaluation phase will measure the effectiveness and efficiency of the course, should occur during and at the end of the

instruction, and should include formative and summative evaluation. The formative evaluation is necessary to offer improvement to the course while it is being implemented. The summative evaluation will offer an overall effectiveness assessment.

Shearin (1997) also provides a step-by-step approach to developing a class. The first step is to decide on a class, as some are more conducive than others. This course should already be approved in the Common Course Library through the Community College System Office. Through this listing, the instructor can obtain all course competencies and syllabus information necessary for the class. Shearin (1997) recommends the use of Course Advantage software for the actual development of the class, and illustrates how to prepare the desktop from a template, move the date into the template, create and check all hyperlinks and load the desktop and other data to the web server.

This model has been used to orient interested instructors so that they may develop their own internet course on their campus. The model does attract some interested individuals. But what is being done administratively and organizationally to provide incentives and/or release time to the full-time faculty, so that they may develop these courses? Are directives being handed down from the administrative side of the house to just develop them with no regard that the full-time faculty are already carrying full-time teaching loads, and to develop an internet course takes a great deal of up-front time and work.

Another administrative issue is the additional funds for either part-time or full-time faculty to teach the internet courses. As the faculty are already carry full-time loads, there must be instructional funds to either fund overload compensation or to hire part-time adjunct faculty to carry some of the instructional load. When these issues were discussed in general with the

Carteret Community College Board of Trustees, one board member's response was to hire a consulting firm to develop all of the courses. The majority of the faculty did not concur with this approach. Before addressing these issues, a discussion concerning evaluation of programs is necessary.

Evaluation and Accountability

Without the tool of evaluation and accountability, feedback is unavailable, and therefore, there is no direction in the success or failure of the educational effort. Course evaluation should be an on-going process, and not just at the end of the class, seminar, conference, whatever the event may be.

Through evaluation and accountability, the educator can determine if the intended outcomes were accomplished, if the outcomes were the result of the planned program, if the program was cost effective and how effective were the program inputs, and if accountability can be demonstrated to the stakeholders for program success. The program is and should be accountable to a wide range of people to include the target publics and all who collaborated together in the planning process (Boone, 1985).

It is important to evaluate the program and not the person implementing the program and the best evaluation instrument deals with feedback, both qualitative and quantitative. The practitioners should also be allowed to evaluate the program. The issues of confidentiality, instrument bias and control of subjectivity must be addressed when drawing up the evaluation instrument. Formative evaluations are ongoing and mid-point evaluations are also

recommended. The feedback received offers valuable recommendations and suggestions for correction and reconstruction of the program (Boone, 1985).

Numerous studies have been conducted about the effectiveness of distance learning, and statistically show that there is no significant difference between teaching and learning at a distance and face-to-face. Russell (1993) extracted studies as far back as 1952 which illustrated "The 'No Significant Difference' Phenomenon", and all of them reported either no significant difference, or that the presentation methods were equally effective. All of his extracted studies dealt with television and satellite mode of delivery.

A similar question was raised at John C. Calhoun State Community College located in Decatur, Alabama in 1993. The Associate Dean of Instruction of Calhoun Community College, Chris Hamilton, asked the following:

> "Is there a significant difference in grade distributions when comparing the grades awarded in sections of courses taught in the telecourse format to the grades awarded in separate sections of the same courses that are taught in the traditional classroom format" (Searcy, 1993, p. 3)?

To answer the question, Robert D. Searcy, Institutional Researcher at Calhoun Community College collected telecourse grade point averages, loaded the data into a Microsoft Excel spreadsheet, manipulated the data and then charted the results. He calculated an average grade point average for each course section and then ran a t-test in testing the null hypothesis that "there is no significant difference in the average, grade point average for courses taught in the telecourse format and those taught in the traditional format" (Searcy, 1993). Using a .05 level of

significance, Searcy calculated t = 1.3609, the critical value of t = 2.0322 and he found that there was no significant difference in the grade distributions (Searcy, 1993).

A recent study by Susan E. Conners (1997) of Purdue University, Calamet, arrived at the same conclusion about internet delivery. For this study, the same course was taught through internet and face-to-face. For the internet course, all assignments, syllabus, lectures, and competencies were on the Web for the students to review at any time. The homework assignments were also identical to the course taught face-to-face, with all lab assignments saved to the respective systems rather than printing out the materials. The students were expected to come on campus to take mid-term and final exams. Electronic mail contacts were available for all to read, and the instructor was to respond to all electronic mail within 24 hours. Phone support was available and the instructor was supported by a lab assistant.

The emphasis was placed on the students' self-study and the instructor acted as facilitator and coach. In addition, the pilot class had certain prerequisites so that students would be prepared to take the internet course and required to have their own computer with Windows 3.1 or better operating system, a modem and internet access with electronic mail capability.

In analyzing the grades and evaluations of the students, Conners compared the internet course with the traditional course and found the following grade distribution:

Grade	**On-campus course**	**Distance education pilot**
A	4	4
B	9	4
C	4	3
D	0	1
F	1	1

Total Students	18	13

Conners cited that student evaluations indicated certain advantages to the internet and that instructional materials were better. The comments when asked what the students liked best about the course were as follows:

- Being able to work at my own pace;
- Staying home;
- Convenience and ability to work around the house;
- Not having to find a parking place;
- Flexibility; and
- Lots of support.

When asked what they liked least:

- They are accustomed to a live person and class setting which may provide more understanding of the subject;
- The contents of the subject are a bit too technical for my understanding;
- Electronic mail waiting;
- Lack of interaction among class members;
- Course presentations would appear to belong to verbal lectures; and
- They hit the main points, but probably miss a lot of information given in actual lectures.

Recommendations for future students included staying in touch with the teacher, being aware that the electronic mail server may not be working even if it appears it is, and the formation of study groups can be very helpful.

Summary

This chapter reviewed the historical development of distance learning; policies and procedures used by other community colleges in the North Carolina system in regards to internet instruction; its effectiveness; the perceptions and attitudes of both faculty and staff in regards to internet instruction; student and faculty satisfaction; and the design/program planning of distance learning from registration to the final examination.

The next chapter discusses the methodology used to determine and compare the perceptions of select students and faculty about critical issues affecting internet instruction. This methodology centered on what critical issues affect internet instruction, how important these issues are and how satisfied the faculty and students are with internet instruction in relation to the critical issue. Finally, the methodology addressed any significant differences in the student and faculty perceptions, particularly in the weighted satisfaction responses of the students and faculty.

CHAPTER 3

METHODOLOGY AND DESIGN

The central question for this study was to assess the extent to which community college students and faculty agree on the importance of and satisfaction with the critical issues in relation to the quality of on-line instruction. The purpose of this study was to identify critical issues that affect on-line instruction as perceived by students and faculty from targeted public two-year community colleges in North Carolina, and to determine and compare the perceptions of students and faculty about those practices. This chapter includes the following sections: (a) theoretical framework, (b) research questions, (c) population and sample selection, (d) research design, (e) instrumentation, (f) data collection procedures, (g) data analysis procedures, and (h) methodological limitations of the study.

Theoretical Framework

The theoretical framework for this study focused on critical issues affecting internet instruction from student and faculty perspectives. The critical issues were identified in the literature review as follows:

- Adequate program planning and development, both institutionally and system-wide;
- Leadership for the future;
- Funding for course offerings;
- Accountability - performance-based;
- Technology infrastructure;

- Effectiveness of instruction;
- Enrollment credit for students;
- Release time for instructor(s) to develop the course;
- Instate versus out-of-state tuition; and
- Security measures for individual courses (NCCCS, 1998).

The researcher wished to see if students and faculty from selected North Carolina community college campuses perceived these issues as important. In addition, did certain services, directly affected by these critical issues, exist on their campus, and what was the satisfaction level of the students and faculty with the services offered?

Research Questions

The following questions guided the study and were used as the vehicle from which the findings were gleaned.

- What critical issues affect internet instruction as perceived by students and faculty and do student and faculty perceptions differ on the identification of these critical issues?
- How important are these critical issues as perceived by students and faculty and do student and faculty perceptions differ about the importance of these critical issues and their effect on internet instruction?
- How satisfied are students and faculty with internet instruction at their college in relation to the critical issue and do student and faculty perceptions differ in their personal satisfaction in relation to the critical issue?

- Is there a significant difference in the weighted satisfaction responses of the students and the weighted satisfaction responses of the faculty for each survey statement?

Because of the size of the sample population, the mean overall responses of the faculty and the mean overall responses of the students for each survey question were used to produce a weighted satisfaction for both groups. Once this statistic was obtained, a one tailed t-test was conducted to determine if there is a significant difference in the students' weighted satisfaction for each statement and the faculty's weighted satisfaction for each statement.

A survey was developed asking the student and faculty to identify:

- how important the critical issue was in affecting on-line instruction. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "not important" and 4 being "very important."
- if the critical issue existed at their campus. The respondent was requested to answer "yes" or "no."
- their personal satisfaction with the on-line instruction at their institution in relation to the critical issue. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "very dissatisfied" and 4 being "very satisfied."

A copy of the survey instrument is attached as Appendix A.

Population and Sample Selection

The population for this study included instructors and students from the following community colleges in the North Carolina Community College System: Carteret Community College, Morehead City; Fayetteville Technical Community College, Fayetteville; Johnston

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Community College, Smithfield; and Montgomery Community College, Troy. All four colleges agreed to participate in the perception survey of critical issues affecting on-line instructional delivery. The researcher wished to include colleges of differing sizes and colleges located in rural and urban areas. Table 1 identifies the colleges and their characteristics.

Table 1. College Identification

Name of College	Community	FTE	Industry
Montgomery Community College	Rural	686 FTE	Farming, textiles, lumber
Carteret Community College	Rural	1377 FTE	Travel and Tourism
Johnston Community College	Urban	2890 FTE	Pharmaceuticals, lumber
Fayetteville Community College	Urban	8600 FTE	Military

The sample included four community colleges, each serving different size counties and each with different economic, social and cultural characteristics. Faculty participating in the study were current on-line instructors.

Research Design

This study was descriptive and inferential in nature. Descriptive research allows researchers to measure the characteristics of the sample at one point in time or conduct a longitudinal study, during which a sample is followed over time. Descriptive research is defined as a type of investigation that measures the characteristics of a sample or population on pre-specified variables (Gall, Borg & Gall, 1996).

Descriptive research was selected because it provided the best method to assess students and faculty perceptions about critical issues affecting on-line instruction. The research methodology selected for this study was survey research. Gall, Borg & Gall (1996) stated that questionnaires and interviews are widely used in educational research to collect information that is not easily or directly observable. Descriptive data are usually collected through the use of mail surveys and questionnaires.

Gall et al., (1996) suggested that survey research help researchers obtain information from respondents on personal beliefs and attitudes. Survey research was selected because it provided an efficient way to organize, describe, and summarize information. It also allowed for explanation and exploration of new data in areas that have not been heavily researched. Survey research, which can also be inferential in nature, also allows researchers to access a significant amount of information from a larger portion of the population (Gall, et al., 1996).

The need for survey research was particularly pertinent for this study because of the limited amount of research that exists about critical issues affecting internet instruction. Conducting survey research helps researchers to gather data from larger numbers of respondents by solving the problem of limited, available data.

Instrumentation

The survey instrument was developed and piloted to measure student and faculty perceptions of the identified critical issues as they applied to their own experiences. In addition, to determine weighted satisfaction of these issues, students and faculty were asked to assess the importance of these issues and their satisfaction with this issue.

Critical issues identified from the literature were used to conduct an appraisal of the on-line related practices that occur at public two-year colleges nationwide, and the student/faculty perception of those issues. Because there was no known instrument that identified critical issues affecting on-line instruction and assessed perceptions about these issues, an original survey instrument was developed (see Appendix A).

Survey questions were developed from a review of the related literature and were linked to the study's research questions. Three types of survey questions were included on the survey instrument. A four-point Likert scale was used to determine and compare student/faculty perceptions about whether the identified critical issues is important. Yes and no responses were used to identify if the critical issues exist at the college campus. A four-point Likert scale was used to determine and compare student/faculty perceptions about satisfaction with the instruction that exists at their institution in relation to the critical issue.

Determining Face Validity

Ary, Jacobs, and Razavieh (1996) mention the concept of content-related validity that refers to having competent colleagues examine the survey to judge whether they feel it is appropriate to measure what it is intended to measure. Prior to the distribution of the survey, it was critiqued by a member of the faculty of the researcher's university and approved for use.

Ary et al., (1996) also point to two independent variables that influence the validity of survey questionnaires.

1. How important is the topic to the respondent?
2. Does the questionnaire protect the respondent's anonymity?

In the case of the first variable, the topic of critical issues affecting internet instruction was important to both students and faculty. The review of the literature identified concerns of the faculty on the topic and suggested that although effective internet instruction is a desired outcome for this form of instructional delivery, there exists a level of confusion and dissatisfaction about its meaning. Despite one's perception about the importance of internet instruction and the critical issues affecting such instruction, this form of instructional delivery is a strong delivery system for higher educational institutions. In this regard, internet instruction and the critical issues cited are important to all faculty and students and thus satisfied the first variable of validity.

The second variable of validity addresses the issue of anonymity among the respondents of the survey. Although the survey did not contain a place for the respondent's name and college, respondents were still guaranteed in the cover letter that they would not be identified and their individual responses would remain confidential. Ary et al., (1996) spoke of the advantage of using mailed questionnaires, because the confidentiality aspect seems to elicit more truthful responses than might would have been obtained through personal interviews. The fact that almost 97% (90 out of 97 respondents) chose to include their name indicated that anonymity was not a major concern for the respondents.

Finally, a pilot test was conducted to assess the validity of the questionnaire, with a cover letter explaining the intent of the survey. Random faculty and students at Montgomery Community College were requested to participate in the pilot test, along with the institutional effectiveness coordinator at Carteret Community College. The pilot test was conducted during Spring, 1999.

Participants were solicited to critique and evaluate the survey to determine its face validity and to make suggestions for improving the instrument. Following a successful pilot project, the survey was finalized for distribution to all four colleges. A letter was sent to the Presidents of each of the identified colleges, asking permission to survey the faculty and students (Appendix B). After receiving approval from the presidents, the sample was contacted by letter with the survey attached (Appendices A and C). The non-respondents received follow-up notice.

Data Collection Procedures

The survey instrument was administered to students and faculty from the sample who participated in on-line instruction spring semester, 1999. Because of the limited number of courses being offered at Carteret, Johnston and Montgomery, all students and faculty participating in internet instruction at these three institutions were invited to participate and were mailed the survey, along with the cover letter explaining the study. However, Carteret Community College wished to administer the survey to its students and a copy of the survey and cover letter was sent to the distance learning coordinator. All other students and faculty were accessible through electronic mail or regular postal delivery.

All faculty at Fayetteville Community College were mailed the survey, but because of the large number of students, a random sample was selected from the Fayetteville on-line student roster. With a total of 500+ students, the researcher elected to survey 25% of the population, giving a total of 125 students. Using a random sample table, 125 numbers were selected between 0 and 500. After listing all of the Fayetteville students and assigning a number from 1 to 500, it

was merely a matter of selecting those students who number matched on of the randomly selected numbers. Each of these students was then mailed the survey by electronic mail.

The return rate for faculty at each college was satisfactory; however, the return rate for the students was dismal. Because of the unsatisfactory return rate for the total student population, both populations were surveyed again during fall semester, 1999.

For the second survey, Montgomery Community College Information Technology Department placed the survey on the College's web page. The on-line faculty members notified their students of the survey and requested that they complete and submit their answers electronically. These surveys were received through group wise electronic mail, ready to be downloaded into an Excel spreadsheet.

The information technology (IT) department at Johnston Community College also placed the survey instrument on their web page, allowing all students and faculty to access the instrument. The Johnston Community College IT department collected the data and mailed the responses to the researcher.

Fayetteville Community College faculty were contacted by electronic mail and returned the survey instrument either through electronic mail or postal delivery. The FTCC faculty also forwarded the survey to all of their students, requesting that they participate in the study and return the survey to the researcher's attention.

Carteret Community College's faculty electronic mailed their responses to the researcher or returned the instrument by postal delivery. The students at Carteret Community College did not respond to the survey. After several inquiries, and being assured that the survey would be

administered both by the Direction of Information Technology and the Coordinator of Distance Learning, it is the researcher's belief that this survey was never administered.

The students and faculty at each institution were invited to participate in this study for a total of 561 possible respondents. Gall et al., (1996) identified two areas that survey researchers should carefully plan: (a) writing effective questions and (b) increasing response rates. Question format determines the statistical tests that can be done. Concomitantly, questionnaire format and design affect the number of completed surveys that are returned. The next section describes each section of the survey along with its corresponding research questions.

Survey Description

Twenty-two statements were made in the survey to address the fourteen critical issues identified, obtaining the answers outlined above.

1. Orientation sessions are necessary in preparing the student for the internet class.
2. On-line registration is available and understandable.
3. Adequate program planning and development is allowed for on-line courses.
4. On-line courses are cost effective.
5. The tests are comprehensive and adequately measure student proficiency.
6. The technology, including computer access on campus, is sufficient to support the on-line course(s).
7. Adequate funding is available for development of on-line course(s) and upgrading technology.

8. On-line courses demonstrate comparable academic rigor when compared to traditional courses.
9. Appropriate links for study materials support the course competencies.
10. The same tuition rate should be charged for in-state and out-of-state students.
11. Security measures for on-line courses are adequate.
12. On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.
13. On-line students must be self-directed and motivated.
14. Faculty is properly trained to instruct on-line course(s).
15. On-line delivery of courses results in unnecessary course duplication.
16. Faculty are given adequate release time to develop on-line courses.
17. Student questions are responded to in a timely manner.
18. The instructor responses to students are informational.
19. The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.
20. For on-line courses to be effective, class size must be restricted.
21. On-line students have access to comparable student services, i.e., library resources, counseling and advising.
22. On-line students are at greater risk to drop the course.

For each question, the respondent was asked if the critical issue was important in its effect on internet instruction. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "not important" and 4 being "very important." The respondent was then asked if the

critical issue existed on their campus by responding "yes" or "no". Finally, the respondent was asked to rate their personal satisfaction with internet instruction at the institution in relation to the critical issue. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "very dissatisfied" and 4 being "very satisfied."

Each respondent was also asked to supply the researcher with the following demographic data: age, gender, highest educational degree, and if the respondent was a student or faculty member.

A null hypothesis was developed for each survey statement, resulting in twenty-two (22) hypotheses. Each null hypothesis is listed as follows:

1. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of orientation sessions in preparing the student for the internet class.
2. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of on-line registration for on-line courses.
3. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of adequate program planning and development for on-line courses.
4. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction of cost effective on-line courses.
5. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction of comprehensive testing, adequately measuring student proficiency.

6. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction with sufficient technology to support on-line courses.

7. Students and instructors involved in on-line instructional delivery will report no difference in the weighted satisfaction adequate funding is available for development of on-line course(s) and upgrading technology.

8. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line courses demonstrate comparable academic rigor as traditional courses.

9. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that appropriate links for study materials support the course competencies.

10. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the same tuition rate should be charged for in-state and out-of-state students.

11. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that security measures for on-line courses are adequate.

12. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.

13. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students must be self-directed and motivated.

14. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that faculty are properly trained to instruct on-line course(s).

15. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line delivery of course results in unnecessary course duplication.

16. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that faculty are given adequate release time to develop on-line courses.

17. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that student questions are responded to in a timely manner.

18. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the instructor responses to students are informational.

19. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that the format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.

20. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that for on-line courses to be effective, class size must be restricted.

21. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students have access to comparable student services, i.e., library resources.

22. Students and instructors involved in on-line instructional delivery will report no difference in weighted satisfaction that on-line students are at greater risk to drop the course.

Data Analysis Procedures

The personal computer software version of Winks was used to analyze the data. All returned surveys were reviewed to ascertain if any answers were unreadable or unclear. As the surveys were returned by electronic mail, the researcher could contact the respondent for clarification of any unclear answers.

The data were keyed into an Excel Worksheet, with the responses first being organized according to the responding college. Once all the data were entered, the worksheets were then combined to show all student responses and all faculty responses. Finally, all answers were incorporated into one worksheet.

Once the data were obtained and categorized into total student and total faculty responses, they were organized and analyzed using appropriate descriptive statistics: (a) frequencies, (b) means, and (c) mean differences. Each group did not have an equal number of respondents.

When attempting a t-test analysis on the data and finding that there was not a normal distribution, the researcher used chi square analysis to compare the data. To avoid all Type I errors, a .02 level of significance was used to determine whether or not a statistical difference existed between student and faculty perceptions.

Summary

This chapter outlined the study's methodology based on a theoretical framework that focused on critical issues affecting internet instruction from the student and faculty perspective. The critical issues were identified in the literature review and the researcher wished to see if students and faculty from select North Carolina community college campuses perceived these issues as important. In addition, did certain services exist on their campus, and what was the satisfaction level of the students and faculty with the services offered.

Survey research was used for this exploratory study because it allowed the researcher to examine student and faculty perceptions about critical issues affecting internet instruction. The parameters for sample selection, instrumentation, data collection procedures, data analysis and methodological limitations were also described. The study's findings are presented in the next chapter.

CHAPTER 4

FINDINGS

The purpose of this study was to identify critical issues that affect internet instruction as perceived by students and faculty at public two-year community colleges in the North Carolina Community College System and to determine and compare the perceptions that students and faculty have about those issues. This was accomplished by developing research questions and a survey instrument to identify:

- How important the critical issue was in affecting on-line instruction. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "not important" and 4 being "very important."
- If the critical issue existed at their campus. The respondent was requested to answer "yes" or "no."
- Their personal satisfaction with the on-line instruction at their institution in relation to the critical issue. The respondent was asked to use an ordinal scale of 1 to 4, with 1 being "very dissatisfied" and 4 being "very satisfied."

The findings related to the research questions (as proposed in Chapters 1 and 3) are presented in this chapter in the following sections: (a) population and sample characteristics, (b) research question findings, (c) analysis of the findings, and (d) chapter summary. The results are presented in narrative form and are accompanied by tables.

The sample's descriptive data were provided in this section to set the stage to present the research findings. Frequency distributions for total respondents and for respondents by position type are presented through tables and discussed.

Population and Sample Characteristics

From the 59 institutions in the North Carolina Community College System, 4 institutions (7%) were selected to participate in this study. The population to be surveyed included instructors and students at Carteret Community College, Morehead City; Fayetteville Technical Community College, Fayetteville; Johnston Community College, Smithfield; and Montgomery Community College, Troy. All four colleges agreed to participate in the perception survey of critical issues affecting on-line instructional delivery. The researcher wished to include colleges of differing sizes, located in rural and urban areas.

Of the four institutions selected for this study, 76 faculty were surveyed and responses were received from 32 faculty (42%). 485 students were surveyed and responses were received from 65 (13.4%). The students from Carteret Community College never responded, despite numerous contacts. It is the researcher's belief that the students never received the survey. The responses represented institutions located in urban, rural locales, and with FTE enrollments ranging from 560 to 8,600 (IPEDS Enrollment Data, 1999).

Questionnaires were electronically submitted to the faculty and students at each selected institution, for a total sample of 561 potential respondents. A total of 97 faculty and students (17.3%) responded to the questionnaire. These data are presented in Table 2.

Table 2. Respondent Return Rate

Sample	Frequency	Sample Size	Percentage
Single Responses	97	561	17.3%

Demographic Characteristics of the Respondents

A total of 32 faculty and 65 students responded to the questionnaire. Of the student respondents, more females (66%) than males (32%) participated in the study, with one (2%) not reporting gender. In addition, 58% of the students reported their level of education at high school completion, 18% held associate degrees, 11% held bachelor degrees, 6% held masters degrees, 2% held doctorate degrees, and 5% did not report the level of education. 6% of the students responding were less than 21 years of age, 38% of the students responding were 21 to 30 years of age, 22% were 31 to 40 years of age, 23% were 41 to 50 years of age, 9% were 51 to 60 years of age, and 2% did not report their age level.

Of the faculty respondents, more males (63%) than females (37%) participated in the study. In addition, 0% of the faculty reported their level of education at high school completion, 3% held diploma certification, 3% held associate degrees, 16% held bachelor degrees, 72% held masters degrees, and 6% held doctorate degrees. 0% of the faculty responding were less than 21 years of age, 6% were 21 to 30 years of age, 22% were 31 to 40 years of age, 34% were 41 to 50 years of age, 34% were 51 to 60 years of age, and 3% were 60+ years of age. These data are presented in Tables 3, 4 and 5 for both faculty and students.

Table 3. Frequency Distribution of Respondents by Position and Gender

Gender	Students		Faculty	
	Frequency	%	Frequency	%
Male	21	32%	20	63%
Female	43	66%	12	38%
Not Reported	1	2%	0	0%
Total	65	100%	32	100%

Table 4. Frequency Distribution of Respondents by Position and Highest Degree Earned

Highest Degree Earned	Students		Faculty	
	Frequency	%	Frequency	%
High School Diploma	38	58%	0	0%
Diploma	0	0%	1	3%
Associate	12	18%	1	3%
Bachelors	7	11%	5	16%
Masters	4	6%	23	72%
Doctorate	1	2%	2	6%
Not Reported	3	5%	0	0%
Total	65	100%	32	100%

Table 5. Frequency Distribution of Respondents by Position and Age

Age	Students		Faculty	
	Frequency	%	Frequency	%
Less than 21	4	6%	0	0%
21 - 30	25	38%	2	6%
31 – 40	14	22%	7	22%
41 – 50	15	23%	11	34%
51 – 60	6	9%	11	34%
60 +	0	0%	1	3%
Not Reported	1	2%	0	0%
Total	65	100%	32	100%

Research Question Findings

This section presents the results of the research questions described in Chapters 1 and 3. A .02 level of significance was used to determine whether or not a statistical difference existed between student and faculty perceptions.

Research Question 1:

Research question 1a stated **"What critical issues affect internet instruction as perceived by students and faculty?"** Using the twenty-two statements described in Chapter 3 to address the fourteen critical issues identified in Chapter 1, the respondents were asked to answer yes or no

regarding whether or not it was even a critical issue. Table 6 presents the percentage of yes and no answers received by the faculty.

Table 6. Critical Issues Identified by Faculty as Existing on Campuses

Critical Issue	Yes %	No %
1. Orientation sessions are necessary in preparing the student for the internet class.	26 (81%)	6 (19%)
2. On-line registration is available and understandable.	24 (75%)	8 (25%)
3. Adequate program planning and development is allowed for on-line courses.	29 (91%)	3 (09%)
4. On-line courses are cost effective.	23 (72%)	9 (28%)
5. The tests are comprehensive and adequately measure student proficiency.	25 (78%)	7 (22%)
6. The technology, including computer access on campus, is sufficient to support the on-line course(s).	29 (91%)	3 (09%)
7. Adequate funding is available for development of on-line course(s) and upgrading technology.	28 (88%)	4 (12%)
8. On-line courses demonstrate comparable academic rigor as traditional courses.	25 (78%)	7 (22%)
9. Appropriate links for study materials support the course competencies.	18 (56%)	13 (41%)
10. The same tuition rate should be charged for in-state and out-of-state students.	18 (56%)	13 (41%)
11. Security measures for on-line courses are adequate.	27 (84%)	5 (16%)
12. On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	17 (53%)	15 (47%)

Table 6 (continued)

Critical Issue	Yes %	No %
13. On-line students must be self-directed and motivated.	30 (94%)	2 (06%)
14. Faculty are properly trained to instruct on-line course(s).	31 (97%)	1 (03%)
15. On-line delivery of courses results in unnecessary course duplication.	24 (75%)	8 (25%)
16. Faculty are given adequate release time to develop on-line courses.	29 (91%)	3 (09%)
17. Student questions are responded to in a timely manner.	28 (88%)	4 (12%)
18. The instructor responses to students are informational.	20 (63%)	12 (37%)
19. The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	27 (84%)	5 (16%)
20. For on-line courses to be effective, class size must be restricted.	27 (84%)	5 (16%)
21. On-line students have access to comparable student services, i.e., library resources, counseling and advising.	26 (81%)	6 (06%)
22. On-line students are at greater risk to drop the course.	21 (66%)	11(34%)

N=32

Table 7 presents the percentage of "yes," "no" and "no response" answers received by the students.

Table 7. Critical Issues Identified by Students as Existing on Campuses

Critical Issue	Yes %	No %	NR %
1. Orientation sessions are necessary in preparing the student for the internet class.	46 (71%)	18 (28%)	
2. On-line registration is available and understandable.	46 (71%)	17 (26%)	2 (03%)
3. Adequate program planning and development is allowed for on-line courses.	53 (82%)	9 (14%)	3 (05%)
4. On-line courses are cost effective.	55 (85%)	8 (12%)	2 (03%)
5. The tests are comprehensive and adequately measure student proficiency.	52 (80%)	11 (17%)	2 (03%)
6. The technology, including computer access on campus, is sufficient to support the on-line course(s).	52 (80%)	11 (17%)	2 (03%)
7. Adequate funding is available for development of on-line course(s) and upgrading technology.	56 (86%)	4 (06%)	5 (08%)
8. On-line courses demonstrate comparable academic rigor as traditional courses.	53 (82%)	9 (14%)	3 (05%)
9. Appropriate links for study materials support the course competencies.	45 (69%)	18 (28%)	2 (03%)
10. The same tuition rate should be charged for in-state and out-of-state students.	33 (51%)	26 (40%)	6 (09%)
11. Security measures for on-line courses are adequate.	51 (78%)	9 (14%)	5 (08%)
12. On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	33 (51%)	29 (45%)	3 (05%)
13. On-line students must be self-directed and motivated.	58 (89%)	3 (05%)	4 (06%)
14. Faculty are properly trained to instruct on-line course(s).	54 (83%)	6 (09%)	5 (08%)
15. On-line delivery of courses results in unnecessary course duplication.	29 (45%)	28 (43%)	8 (12%)

Table 7 continued

Critical Issue	Yes %	No %	NR %
16. Faculty are given adequate release time to develop on-line courses.	48 (74%)	7 (11%)	10 (15%)
17. Student questions are responded to in a timely manner.	53 (82%)	4 (06%)	8 (12%)
18. The instructor responses to students are informational.	45 (69%)	17 (29%)	3 (05%)
19. The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	54 (83%)	6 (09%)	5 (08%)
20. For on-line courses to be effective, class size must be restricted.	34 (52%)	27 (42%)	4 (06%)
21. On-line students have access to comparable student services, i.e., library resources, counseling and advising.	55 (85%)	8 (12%)	2 (03%)
22. On-line students are at greater risk to drop the course.	37 (57%)	22 (34%)	6 (09%)

N=65

Table 8 provides the percentage of both students and faculty responding yes to the identification of critical issues affecting internet instruction.

Table 8. Percentage of Student and Faculty responding "Yes" when Identifying Critical Issues

Critical Issue	Student Percent	Faculty Percent	Percent Difference
1. Orientation sessions are necessary in preparing the student for the internet class.	71%	81%	10
2. On-line registration is available and understandable.	71%	75%	4

Table 8 (continued)

Critical Issue	Students Percent	Faculty Percent	Percent Difference
3. Adequate program planning and development is allowed for on-line courses.	82%	91%	9
4. On-line courses are cost effective.	85%	72%	13
5. The tests are comprehensive and adequately measure student proficiency.	80%	78%	2
6. The technology, including computer access on campus, is sufficient to support the on-line course(s).	80%	91%	11
7. Adequate funding is available for development of on-line course(s) and upgrading technology.	86%	88%	2
8. On-line courses demonstrate comparable academic rigor as traditional courses.	82%	78%	4
9. Appropriate links for study materials support the course competencies.	69%	56%	5
10. The same tuition rate should be charged for in-state and out-of-state students.	51%	56%	5
11. Security measures for on-line courses are adequate.	78%	84%	6
12. On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	51%	53%	2
13. On-line students must be self-directed and motivated.	89%	94%	5
14. Faculty are properly trained to instruct on-line course(s).	83%	97%	14
15. On-line delivery of courses results in unnecessary course duplication.	45%	75%	30
16. Faculty are given adequate release time to develop on-line courses.	74%	91%	23

Table 8 (continued)

Critical Issue	Students Percent	Faculty Percent	Percent Difference
17. Student questions are responded to in a timely manner.	82%	88%	6
18. The instructor responses to students are informational.	69%	63%	6
19. The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	83%	84%	1
20. For on-line courses to be effective, class size must be restricted.	52%	84%	32
21. On-line students have access to comparable student services, i.e., library resources, counseling and advising.	85%	81%	4
22. On-line students are at greater risk to drop the course.	57%	66%	11

Research Question 1b:

Research question 1b stated **"Do student and faculty perceptions differ in the identification of critical issues?"** The "yes" responses of students and faculty to each issue were cross tabulated and chi-square tests were performed to determine if there was a significant difference in the two population's perception. Testing at .02 to avoid all Type I errors, **only one statement showed a significant difference in the proportion of "yes" respondents.** Statement 20, which said **"For on-line courses to be effective, class size must be restricted.", faculty (84%) were significantly higher than students (52%).** It is the researcher's opinion that there is a significant difference because faculty are much more concerned about workload issues, class preparation and faculty overload than are the students who are taking the class.

Research Question 2:

Research Question 2 stated **"How important are these critical issues as perceived by students and faculty and do student and faculty perceptions differ about the importance of these critical issues and their effect on internet instruction?"**

For each of the twenty-two statements on the survey, the respondent was asked if the critical issue was important in its effect on internet instruction. Respondents used a four-point Likert-type scale to rate the importance of each practice to enhancing student success, with the answer "1" being "not important", "2" being somewhat important, "3" being "important" and "4" being "very important." Individual means for each of the twenty-two statements were calculated.

A mean response of 2.5 or above for each practice, which served as the midpoint between "1" (not important) and "4" (very important), classified that practice as "important or very important." A mean response below 2.5 classified that practice as "somewhat important or not important." For the faculty sample, the respondents perceived every statement but one as "important or very important" to internet instruction. The issue of on-line delivery of courses results in unnecessary course duplication received a mean average of 2.26 showing that the faculty perceived this issue as "somewhat important or not important" in affecting internet instruction.

Table 9. Faculty Perceptions about Importance of Critical Issues

Critical Issue	N	$\bar{X}$	Importance Internet Instruction
Orientation sessions are necessary in preparing the student for the internet class.	32	3.29	Important/Very Important

Table 9 (continued)

Critical Issue	N	$\bar{X}$ Importance Internet Instruction
On-line registration is available and understandable.	32	3.18 Important/Very Important
Adequate program planning and development is allowed or on-line courses.	32	3.50 Important/Very Important
On-line courses are cost effective.	32	2.94 Important/Very Important
The tests are comprehensive and adequately measure student proficiency.	32	3.29 Important/Very Important
The technology, including computer access on campus, is sufficient to support the on-line course(s).	32	3.62 Important/Very Important
Adequate funding is available for development of on-line course(s) and upgrading technology.	32	3.29 Important/Very Important
On-line courses demonstrate comparable academic rigor as traditional courses.	32	3.27 Important/Very Important
Appropriate links for study materials support the course competencies.	31	3.03 Important/Very Important
The same tuition rate should be charged for in-state	31	2.62 Important/Very Important
Security measures for on-line courses are adequate.	32	3.21 Important/Very Important
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	32	2.77 Important/Very Important
On-line students must be self-directed and motivated.	32	3.62 Important/Very Important
Faculty are properly trained to instruct on-line course(s).	32	3.53 Important/Very Important

On-line delivery of courses results in unnecessary course duplication.	32	2.26	Somewhat Important/Not Important

Table 9 (continued)

Critical Issue	N	$\bar{X}$	Importance Internet Instruction
Faculty are given adequate release time to develop on-line courses.	32	3.50	Important/Very Important
Student questions are responded to in a timely manner.	32	3.47	Important/Very Important
The instructor responses to students are informational.	32	3.24	Important/Very Important
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	32	3.32	Important/Very Important
For on-line courses to be effective, class size must be restricted.	32	3.21	Important/Very Important
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	32	3.21	Important/Very Important
On-line students are at greater risk to drop the course.	32	2.94	Important/Very Important

N=32

For the student population, the respondents perceived every statement but one as "important or very important" to internet instruction. The issue of on-line delivery of courses results in unnecessary course duplication received a mean average of 2.49 showing that the students perceived this issue as "somewhat important or not important" in affecting internet instruction.

It should be noted that both the faculty and student population rated the same issue as somewhat important or not important.

Table 10. Student Perceptions about Importance of Critical Issues

Critical Issue	N	$\bar{X}$	Importance to Internet Instruction
Orientation sessions are necessary in preparing the student for the internet class.	64	3.20	Important/Very Important
On-line registration is available and understandable.	58	3.11	Important/Very Important
Adequate program planning and development is allowed or on-line courses.	59	3.29	Important/Very Important
On-line courses are cost effective.	62	3.43	Important/Very Important
The tests are comprehensive and adequately measure student proficiency.	62	3.55	Important/Very Important
The technology, including computer access on campus, is sufficient to support the on-line course(s).	62	3.66	Important/Very Important
Adequate funding is available for development of on-line course(s) and upgrading technology.	59	3.42	Important/Very Important
On-line courses demonstrate comparable academic rigor as traditional courses.	63	3.34	Important/Very Important
Appropriate links for study materials support the course competencies.	62	3.32	Important/Very Important
The same tuition rate should be charged for in-state and out-of-state students.	59	2.65	Important/Very Important

Table 10 (continued)

Critical Issue	N	$\bar{X}$	Importance to Internet Instruction
Security measures for on-line courses are adequate.	60	3.39	Important/Very Important
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	62	2.91	Important/Very Important
On-line students must be self-directed and motivated.	63	3.72	Important/Very Important
Faculty are properly trained to instruct on-line course(s).	60	3.54	Important/Very Important
On-line delivery of courses results in unnecessary course duplication.	54	2.49	Somewhat Important/Not Important
Faculty are given adequate release time to develop on-line courses.	55	3.09	Important/Very Important
Student questions are responded to in a timely manner.	59	3.48	Important/Very Important
The instructor responses to students are informational.	60	3.29	Important/Very Important
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	61	3.45	Important/Very Important
For on-line courses to be effective, class size must be restricted.	59	2.60	Important/Very Important
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	60	3.35	Important/Very Important
On-line students are at greater risk to drop the course.	56	2.72	Important/Very Important

Research Question 3:

Research Question 3 stated "**How satisfied are students and faculty with internet instruction at their college in relation to the critical issue and do student and faculty perceptions differ in their personal satisfaction in relation to the critical issue?"**

For each of the twenty-two statements on the survey, the respondent was asked if the critical issue was important in its effect on internet instruction. Respondents used a four-point Likert-type scale to rate the importance of each practice to enhancing student success, with "1" being "very dissatisfied", "2" being "dissatisfied", "3" being "satisfied", and "4" being "very satisfied." Individual means for each of the twenty-two statements were calculated.

A mean response of 2.5 or above for each practice, which served as the midpoint between "1" (very dissatisfied) and "4" (very satisfied), classified that practice as "satisfied or very satisfied." A mean response below 2.5 classified that practice as "dissatisfied or very dissatisfied."

For the faculty sample, the respondents perceived every statement but four as "satisfied or very satisfied" with internet instruction. The issue of "adequate program planning and development is allowed for on-line courses" received a mean average of 2.32 showing that the faculty were "dissatisfied or very dissatisfied" with this critical service. The issue of "adequate funding is available for development of on-line course(s) and upgrading technology" received a mean average of 2.41 showing that the faculty were "dissatisfied or very dissatisfied" with this critical service. The issue of "faculty are properly trained to instruct on-line courses" received a mean average of 2.29 showing that the faculty were "dissatisfied or very dissatisfied" with this critical service. The issue of faculty are given adequate release time to develop on-line

course(s)" received a mean average of 1.77 showing that the faculty were "dissatisfied or very dissatisfied" with this critical service.

Table 11. Faculty Perceptions about Satisfaction with Critical Issues

Critical Issue	N	$\bar{X}$	Satisfaction Response
Orientation sessions are necessary in preparing the student for the internet class.	32	2.79	Satisfied/Very Satisfied
On-line registration is available and understandable. Satisfied	32	2.59	Satisfied/Very
Adequate program planning and development is allowed or on-line courses.	32	2.32	Dissatisfied/Very Dissatisfied
On-line courses are cost effective.	31	2.71	Satisfied/Very Satisfied
The tests are comprehensive and adequately measure student proficiency.	32	2.97	Satisfied/Very Satisfied
The technology, including computer access on campus, is sufficient to support the on-line course(s).	32	2.94	Satisfied/Very Satisfied
Adequate funding is available for development of on-line course(s) and upgrading technology.	32	2.41	Dissatisfied/Very Dissatisfied
On-line courses demonstrate comparable academic rigor as traditional courses.	32	3.36	Satisfied/Very Satisfied
Appropriate links for study materials support the course competencies.	31	2.94	Satisfied/Very Satisfied
The same tuition rate should be charged for in-state and out-of-state students.	31	2.62	Satisfied/Very Satisfied
Security measures for on-line courses are adequate.	31	2.53	Satisfied/Very Satisfied

Table 11 (continued)

Critical Issue	N	$\bar{X}$	Satisfaction Response
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	32	2.88	Satisfied/Very Satisfied
On-line students must be self-directed and motivated.	32	2.59	Satisfied/Very Satisfied
Faculty are properly trained to instruct on-line course(s).	31	2.29	Dissatisfied/Very Dissatisfied
On-line delivery of courses results in unnecessary course duplication.	31	2.71	Satisfied/Very Satisfied
Faculty are given adequate release time to develop on-line courses.	32	1.77	Dissatisfied/Very Dissatisfied
Student questions are responded to in a timely manner.	32	3.21	Satisfied/Very Satisfied
The instructor responses to students are informational.	32	3.09	Satisfied/Very Satisfied
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	32	3.06	Satisfied/Very Satisfied
For on-line courses to be effective, class size must be restricted.	32	2.79	Satisfied/Very Satisfied
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	31	2.82	Satisfied/Very Satisfied
On-line students are at greater risk to drop the course.	32	2.56	Satisfied/Very Satisfied

N=32

For the student sample, the respondents perceived every statement but one as "satisfied or very satisfied" with internet instruction. The issue of "On-line delivery of courses results in unnecessary course duplication" received a mean average of 2.34 showing that the students were "dissatisfied or very dissatisfied" with this critical service.

Table 12. Student Perceptions about Satisfaction with Critical Issues

Critical Issue	N	$\bar{X}$	Satisfaction Response
Orientation sessions are necessary in preparing the student for the internet class.	64	3.22	Satisfied/Very Satisfied
On-line registration is available and understandable.	58	2.52	Satisfied/Very Satisfied
Adequate program planning and development is allowed or on-line courses.	58	2.76	Satisfied/Very Satisfied
On-line courses are cost effective.	62	3.12	Satisfied/Very Satisfied
The tests are comprehensive and adequately measure student proficiency.	62	3.29	Satisfied/Very Satisfied
The technology, including computer access on campus, is sufficient to support the on-line course(s).	61	2.88	Satisfied/Very Satisfied
Adequate funding is available for development of on-line course(s) and upgrading technology.	55	2.57	Satisfied/Very Satisfied
On-line courses demonstrate comparable academic rigor as traditional courses.	63	3.17	Satisfied/Very Satisfied
Appropriate links for study materials support the course competencies.	61	3.01	Satisfied/Very Satisfied
The same tuition rate should be charged for in-state and out-of-state students.	56	2.62	Satisfied/Very Satisfied

Security measures for on-line courses are adequate.	59	3.06	Satisfied/Very Satisfied
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	62	2.91	Satisfied/Very Satisfied

Table 12 (continued)

Critical Issue	N	$\bar{X}$	Satisfaction Response
On-line students must be self-directed and motivated.	58	3.12	Satisfied/Very Satisfied
Faculty are properly trained to instruct on-line course(s).	60	3.31	Satisfied/Very Satisfied
On-line delivery of courses results in unnecessary course duplication.	49	2.34	Dissatisfied/Very Dissatisfied
Faculty are given adequate release time to develop on-line courses.	52	2.58	Satisfied/Very Satisfied
Student questions are responded to in a timely manner.	60	3.02	Satisfied/Very Satisfied
The instructor responses to students are informational.	62	3.25	Satisfied/Very Satisfied
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	61	3.19	Satisfied/Very Satisfied
For on-line courses to be effective, class size must be restricted.	55	2.88	Satisfied/Very Satisfied
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	60	3.06	Satisfied/Very Satisfied
On-line students are at greater risk to drop the course.	50	2.54	Satisfied/Very Satisfied

N=65

Comparing the respondents' perceptions about the importance of the available service with perceptions of satisfaction revealed that those practices rated as the most important did not always receive the highest satisfaction ratings. Statement 16 of the survey stated "That on-line students must be self-directed and motivated." The overall mean faculty response for importance of this issue was 3.500 but the mean response for satisfaction was 1.7646. In addition, this issue was rated as one of the highest in being important. Another highly rated issue in terms of importance was the availability of an understandable, on-line registration system. The overall mean faculty response for this issue again was 3.5000 but the mean response for satisfaction was 2.3235. Table 13 combines both the mean faculty responses for importance and satisfaction and the mean student responses for importance and satisfaction.

Table 13. Importance and Satisfaction Mean Responses for Student and Faculty

	Student		Faculty	
	Imp	Sat	Imp	Sat
Critical Issue	X	X	X	X
Orientation sessions are necessary in preparing the student for the internet class.	3.20	3.22	3.29	2.79
On-line registration is available and understandable.	3.11	2.52	3.18	2.59
Adequate program planning and development is allowed or on-line courses.	3.29	2.76	3.50	2.32
On-line courses are cost effective.	3.43	3.12	2.94	2.71
The tests are comprehensive and adequately measure student proficiency.	3.55	3.29	3.29	2.97
The technology, including computer access on campus, is sufficient to support the on-line course(s).	3.66	2.88	3.62	2.94

Adequate funding is available for development of on-line course(s) and upgrading technology.	3.42	2.57	3.29	2.41
On-line courses demonstrate comparable academic rigor as traditional courses.	3.34	3.17	3.27	3.36

Table 13 (continued

	Student		Faculty	
	Imp	Sat	Imp	Sat
Critical Issue	X	X	X	X
Appropriate links for study materials support the course competencies.	3.32	3.01	3.03	2.94
The same tuition rate should be charged for in-state and out-of-state students.	2.65	2.62	2.62	2.62
Security measures for on-line courses are adequate.	3.39	3.06	3.21	2.53
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	2.91	2.91	2.77	2.88
On-line students must be self-directed and motivated.	3.72	3.12	3.62	2.59
Faculty are properly trained to instruct on-line course(s).	3.54	3.31	3.53	2.29
On-line delivery of courses results in unnecessary course duplication.	2.49	2.34	2.26	2.71
Faculty are given adequate release time to develop on-line courses.	3.09	2.58	3.50	1.77
Student questions are responded to in a timely manner.	3.48	3.02	3.47	3.21
The instructor responses to students are informational.	3.29	3.25	3.24	3.09
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	3.45	3.19	3.32	3.06
For on-line courses to be effective, class size must				

be restricted.	2.60	2.88	3.21	2.79
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	3.35	3.06	3.21	2.82

Table 13 (continued

	Student		Faculty	
	Imp	Sat	Imp	Sat
Critical Issue	X	X	X	X
On-line students are at greater risk to drop the course.	2.72	2.54	2.94	2.56

For each of the twenty-two statements on the survey, the mean responses of the faculty and students for both importance and satisfaction were reported. To compare the importance mean and the satisfaction mean of the respondent, the following analysis was conducted. Both the satisfaction statement and the importance statement used a 4 point scale for the answer. By multiplying the possible number of answers together, the number of possible cells equaled 16. Because of the number of respondents from the sample population, it was felt that a comparison of the weighted satisfaction of the students and faculty would be a more reliable comparison to determine if there was a significant difference between the student and faculty respondents.

Taking the student respondents mean response for importance and the mean response for satisfaction, the two numbers were multiplied together, giving a weighted satisfaction mean for the student respondents. Likewise, taking the faculty respondents mean response for importance and the mean response for satisfaction, the two numbers were multiplied together, giving a

weighted satisfaction mean for the faculty respondents. Table 14 lists the results of the weighted satisfaction means for both students and faculty.

Table 14. Weighted Satisfaction Mean for Student and Faculty Respondents

Critical Issue	Weighted Satisfaction Mean Student N	Student $\bar{X}$	Faculty N	Faculty $\bar{X}$
Orientation sessions are necessary in preparing the student for the internet class.	65	10.2892	32	9.2042
On-line registration is available and understandable.	65	7.8409	32	8.2214
Adequate program planning and development is allowed or on-line courses.	65	9.1171	32	8.1323
On-line courses are cost effective.	65	10.7145	32	7.9584
The tests are comprehensive and adequately measure student proficiency.	65	11.7003	32	9.7854
The technology, including computer access on campus, is sufficient to support the on-line course(s).	65	10.5339	32	10.6401
Adequate funding is available for development of on-line course(s) and upgrading technology.	65	8.7749	32	7.9446
On-line courses demonstrate comparable academic rigor as traditional courses.	65	10.5803	32	9.9861
Appropriate links for study materials support the course competencies.	65	10.0203	32	8.9100
The same tuition rate should be charged for in-state	65	6.9207	32	6.8520
Security measures for on-line courses are adequate.	65	10.3621	32	8.1089
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	65	8.4546	32	7.9688
On-line students must be self-directed and motivated.	65	11.6274	32	9.3633
Faculty are properly trained to instruct on-line course(s).	65	11.7041	32	8.0968

Table 14 (continued)

Critical Issue	Weighted Satisfaction Mean Student N	Student $\bar{X}$	Faculty N	Faculty $\bar{X}$
On-line delivery of courses results in unnecessary course duplication.	65	5.8281	32	6.1280
Faculty are given adequate release time to develop on-line courses.	65	7.9924	32	6.1764
Student questions are responded to in a timely manner.	65	10.4842	32	11.1262
The instructor responses to students are informational.	65	10.6873	32	9.9913
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	65	10.9746	32	10.1660
For on-line courses to be effective, class size must be restricted.	65	7.4800	32	8.9576
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	65	10.2679	32	9.0519
On-line students are at greater risk to drop the course.	65	6.9124	32	7.5260

A chi square analysis was then conducted of the observed weighted satisfaction mean for both populations. **Setting the degrees of freedom at 1, and using $p < .02$, there was no significant differences found between the faculty and the student respondents on any of the statements.** Table 15 is the result of the chi square analysis.

Table 15. Significant Difference between Student and Faculty Weighted Satisfaction in the Identification of Critical Issues

Issue	df	N	Chi-Square
Orientation sessions are necessary in preparing the student for the internet class.	1	72	.0604
On-line registration is available and understandable.	1	70	.0090
Adequate program planning and development is allowed for on-line courses.	1	82	.0562
On-line courses are cost effective.	1	78	.4068
The tests are comprehensive and adequately measure student proficiency.	1	77	.1707
The technology, including computer access on campus, is sufficient to support the on-line course(s).	1	81	.0005
Adequate funding is available for development of on-line course(s) and upgrading technology.	1	84	.0412
On-line courses demonstrate comparable academic rigor as traditional courses.	1	78	.0172
Appropriate links for study materials support the course competencies.	1	63	.0651
The same tuition rate should be charged for in-state and out-of-state students.	1	51	.0003
Security measures for on-line courses are adequate.	1	78	.2748
On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	1	50	.0144
On-line students must be self-directed and motivated.	1	88	.2442
Faculty are properly trained to instruct on-line course(s).	1	85	.6571
On-line delivery of courses results in unnecessary course duplication.	1	37	.0075

Table 15 (continued)

Issue	df	N	Chi-Square
Faculty are given adequate release time to develop on-line courses.	1	77	.2327
Student questions are responded to in a timely manner.	1	79	.0190
The instructor responses to students are informational.	1	65	.0234
The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	1	61	.0309
For on-line courses to be effective, class size must be restricted.	1	61	.1328
On-line students have access to comparable student services, i.e., library resources, counseling and advising.	1	81	.0765
On-line students are at greater risk to drop the course.	1	58	.0260

* $p \leq .02$.

Summary

The findings of the three research questions, proposed in the first and third chapters, were presented in this chapter. An analysis of the data was conducted. Unless otherwise noted, the analysis did not produce significant differences between the perceptions of the students and the faculty. In the identification of whether or not a critical issue was perceived as existing, the "yes" responses of students and faculty to each issue were cross tabulated and chi-square tests were performed to determine if there was a significant difference in the two population's perception.

Testing at .02 to avoid all Type I errors, **only one statement showed a significant difference in the proportion of "yes" respondents.** Statement 20, which said, **"For on-line courses to be effective, class size must be restricted." faculty (84%) were significantly higher than students (52%) were.** It is the researcher's opinion that there is a significant difference because faculty is much more concerned about workload issues, class preparation and faculty overload than are the students who are taking the class.

After obtaining the weighted satisfaction mean of both populations, a chi square analysis was then conducted of the observed weighted satisfaction means. **Setting the degrees of freedom at 1, and using $p < .02$, there was no significant differences found between the faculty and the student respondents on any of the statements.**

The study's findings can be used to guide further research on collaboration between academic and student affairs personnel as it relates to perceptions about the issues affecting internet instruction, particularly in enhancing student and faculty success and satisfaction with on-line instruction. Chapter 5, based on the survey results and an analysis of the literature, discusses these findings. Conclusions and recommendations for higher education practice and research are presented.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The central question for this study was to assess the extent to which community college students and faculty agree on the importance of and satisfaction with the cited critical issues in relation to on-line instruction. The purpose of this study was to identify critical issues that affect on-line instruction as perceived by students and faculty from targeted public two-year community colleges in North Carolina, and to determine and compare the perceptions of students and faculty about those practices.

It was proposed to develop a methodology to evaluate proposed critical issues affecting internet instruction, to see if students and faculty felt the issues existed, if they identified the issues as being important, and to rate their satisfaction level with the services offered. Through the literature review, it was noted that grade comparisons between distance instruction and traditional instruction had been asked and answered enough. It is apparent that there are far greater issues within the North Carolina Community College System and within the individual community colleges.

In the hurry and need to stay abreast of current technologies and the market for funding these new technologies, some aspects of planning, organizing, administering and evaluating this new technology have not been carried out. Many instructors feel pressured to produce the internet courses and are frustrated with this project on top of their already loaded schedules. Instructors at North Carolina community colleges are teaching 18 to 20 contact hours per

semester, expected to serve on committees, participate in college functions, and currently are preparing for a visit from the regional accrediting agency in 1999. They are, by majority, reticent to take up the internet banner, and some are outspoken enough to question the incentive for doing this objective (Keough, 1999).

Basic computer skills, such as being able to access electronic mail, and operate within Windows in a word processing package does not make the majority of the faculty comfortable with the idea of developing their own internet course. An instructor from Manchester Community-Technical College, Patrick Sullivan, summarized his negative reaction to internet courses by saying "There is much that we do not know about teaching on-line, but the one thing we're absolutely sure about is that it is labor intensive . . . So, if you're going to teach on-line, say farewell to your wife, your children and your free time. Enjoy!" (Community College Times, March 10, 1998).

Conclusions

The study findings were important for the following reasons: (a) respondents represented a demographic and geographical base of institutions in the North Carolina Community College System, (b) the findings identified issues that are occurring and are not occurring at these two-year community colleges, and (c) perceptions about identified critical issues were compared from both faculty and students' perspectives.

As noted in the introduction, the community college system in North Carolina and instructional administrators throughout the community college arena are concerned about the following issues:

- Adequate program planning and development, both institutionally and system-wide;
- Leadership for the future;
- Funding for course offerings;
- Accountability - performance-based;
- Technology infrastructure;
- Effectiveness of instruction;
- Enrollment credit for students;
- Release time for instructor(s) to develop the course/instructor buy-in to internet;
- Instate versus out-of-state tuition; and
- Security measures for individual courses (NCCCS, 1998).

The majority of the faculty respondents felt that each statement on the survey was a critical issue. The statements receiving a smaller percentage of "yes" answers dealt with having appropriate links for study materials, the same tuition rate for in-state and out-of-state students, and that on-line class discussions met social needs.

The majority of the student respondents also felt that each statement on the survey was a critical issue. The statements receiving a smaller percentage of "yes" answers dealt with having the same tuition rate for in-state and out-of-state students, that on-line class discussions met social needs, that on-line delivery of courses results in course duplication, that on-line class size should be restricted, and on-line students are at greater risk to drop the course. It is of note that two issues, tuition rates and on-line discussions meeting social needs received less "yes" responses by both the faculty and the students. Testing at .02 to avoid all Type I errors, only one statement showed a significant difference in the proportion of "yes" respondents. Statement 20

which said, "For on-line courses to be effective, class size must be restricted.", faculty (84%) were significantly higher than students (52%). It would seem that faculty would be much more concerned about class size and the additional workload involved than would students.

The faculty and the student respondents rated all the survey statements as important/very important except for the statement which said on-line delivery of courses results in unnecessary course duplication. For the faculty population, the respondents perceived every statement but four as "satisfied or very satisfied" with internet instruction. The following issues received a rating of dissatisfied or very dissatisfied:

1. adequate program planning and development is allowed for on-line courses;
2. adequate funding is available for development of on-line course(s) and upgrading technology;
3. faculty are properly trained to instruct on-line courses; and
4. faculty are given adequate release time to develop on-line course(s).

For the student sample, the respondents perceived every statement but one as "satisfied or very satisfied" with internet instruction. The issue of "on-line delivery of courses results in unnecessary course duplication" was rated dissatisfied or very dissatisfied.

Comparing the respondents' perceptions about the importance of the available service with perceptions of satisfaction revealed that those practices rated as the most important did not always receive the highest satisfaction ratings. Statement 16 of the survey stated "That on-line students must be self-directed and motivated." The overall mean faculty response for importance of this issue was 3.500 but the mean response for satisfaction was 1.7646. In addition, this issue was rated as one of the highest in being important. Another highly rated issue in terms of importance was the availability of an understandable, on-line registration system. The overall

mean faculty response for this issue again was 3.5000 but the mean response for satisfaction was 2.3235. There was, however, no significant difference between the faculty weighted mean responses and the students' weighted mean responses on any of the statements.

The research results indicated overall satisfaction with the on-line services and instructional delivery, and the findings present a warm and bright outlook for distance education, particularly internet instruction. The study results also indicated a stable on-line environment. The study was broad-based, and asked general questions concerning student/faculty perceptions about the importance of identified issues and their satisfaction level with the on-line instructional services available to them.

The study did not address quality issues and the student participation return was very low. Further research is needed to address faculty and student satisfaction, for example, whether students would enroll in other on-line courses and whether faculty would teach other internet courses. Further research is also needed on retention of on-line students, benefits of orientation for new students, and tuition/security issues for on-line instruction.

Recommendations for Practice

Staff development and training should be planned, budgeted for and conducted for instructors and staff at the individual community colleges. Those personnel, particularly instructors, who are still uncomfortable and reticent about computer technology need specialized training to enhance their computer skills, increase their understanding basic software packages, and acquaint them with current technology.

The college leaders must challenge their team and always evaluate how technology can improve service to others (Milliron, 1999). Milliron continued to point out that massive change tends to make the players look inward and forget to consider how the change they are fighting with will work to benefit others. He challenges educators to ask if the new technology will improve or expand learning, and will it focus on students? Does the technology promote excellence and innovation and can the outcomes be measured (Milliron, 1999)?

The technological advances will not slow down and the demand for distance instruction will continue to increase. At the College Board meeting, Carol Aslanian with the Southern Regional Educational Board reported the following statistics:

Community College students desire to go to class:

From home	70%
From work	30%
At sites less than 30 minutes from home	65%
At sites they can drive to (as opposed to walking or taking public transportation)	65% (Aslanian, 2000).

Boettcher (1999) predicts that the work and roles of the faculty member will become very specialized and the major barrier to the development and delivery of new learning programs will be the faculty members to develop and design the programs. It is her perspective that on-line tools will evolve very quickly (Boettcher, 1999). She continues that teaching is now technology-intensive, the demands on faculty will continue to increase and educators must recognize that not all will be proficient at the technology demands. The shift to technology is greatly slowed by three factors: habits, resources and time. Time and resources are problems readily acknowledged and discussed. However, habits are less talked about, but Boettcher stresses that

both faculty and students must be assisted as they shift to these new instructional strategies and methods. The shift will be made must easier if faculty are given the tools and time to develop and practice these new habits (Boettcher, 1999). With concentrated effort on staff development, faculty can learn the needed skills to develop new habits in instructional delivery.

Recommendations for Research

A state-wide technology plan to guide and direct the 59 community colleges struggling to keep up with this new, and exciting, form of instructional delivery was suggested at the 1998 Futures Conference held in Raleigh, North Carolina (1998). The results of this conference are as follows:

- planning assumptions were developed specifically stating that education and work will occur in environments dependent and driven by technology;
- community colleges must have the equipment to train students on the current technology;
- organizational structures will be changed by communication technology; and
- community colleges must know how to use this technology to meet the needs of students, businesses and industry (NCCCS, 1998).

Specifically under the technology planning section, the following assumptions were drawn that directly related to internet courses:

1. Increased use of technology by our customers will require that community colleges redefine delivery systems.
2. The increasing demand for connectivity between community colleges, homes, public schools, businesses, and external resources required NCCCS to develop the communication

infrastructure to support distance learning and remote access to resources.

3. The funding model for technology and technical staff at community colleges must be examined and redefined to support the increased demand for and reliance on technology for instructional and administrative functions.
4. Community colleges must increase the use of technology to reach underserved customers.
5. NCCCS must work to reduce administrative, regulatory and accrediting barriers to the effective use of technology at the college (NCCCS, February 26, 1998).

NCCCS began developing goals and objectives to address these assumptions and established a planning council in May, 1998. This planning council has resulted in the creation of the Virtual Learning Community for the North Carolina Community College System.

To assist in the development of the Virtual Learning Community, I would propose that a nationwide study be conducted, and that each state with a community college system be contacted. The contact should be the community college system president with the following questions addressed:

1. Are the community colleges in your system offering internet courses? If no, do you plan to begin in the near future?
2. If yes, do you have a system wide technology plan for developing distance learning courses, particularly Internet courses?
3. If not, do you see the need for a systemwide distance learning technology plan for your state?
4. How are services such as registration, counseling, financial aid made available to distance learning students?

5. How are you budgeted for internet courses funding to include instructional earnback, facilities equipment and instructional supplies?
6. Do you charge in-state/out-of-state tuition for distance learning students, or one tuition rate for all?
7. How are you addressing faculty load and release time so that these courses could be developed?
8. Do you feel it is reasonable to request faculty to develop internet courses?
9. How do you provide comparable services to all of your students if required to do so?
10. In providing comparable services, do you feel attendance should be taken for distance learning classes? If so, how do you take attendance for internet classes?
11. What practices exist for the retention of on-line students? What steps should be taken to improve the retention rate of on-line students?
12. Do you have the infrastructure necessary to support internet course delivery?
13. How do you handle security for your Internet courses? For example, do you have students come on campus or proctored at another location for their tests and exams? Another example is when an instructor develops a course, who owns the course? The college or the instructor?

Research is needed on the above questions so that theses issues may be addressed more specifically. The American Association of Community Colleges should be contacted to solicit their endorsement and support of this study. This association could provide valuable contacts who would have additional concerns that could be incorporated into the research. This research would not actually conclude with the development of a statewide technology plan, but would provide much needed data to be incorporated into said plan.

It is up to the leaders and educators in the community college system to effectively plan, develop, administer, organize and evaluate technological plans to meet the needs of their internal and external communities, stakeholders and most importantly, their students. It is a challenge to be met, and new habits must be developed.

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Appendices

Appendix A: Letter to the Presidents of the Participating Community Colleges

Date

Dr. _____
President
_____Community College

Dear Dr. _____:

I am a doctoral student in the Adult and Community College Education Program at North Carolina State University. My dissertation study researches on-line delivery of instruction courses, the critical issues affecting on-line instruction, along with determining whether both instructors and students are satisfied with this method of instruction.

The purpose of this correspondence is to request either electronic mail or postal addresses for students who participated in the internet courses this past fall semester, and for the instructors facilitating these courses. These students and instructors will be surveyed on a voluntary basis concerning traditional courses versus internet courses, and all responses will be treated confidentially.

Your favorable consideration of my request will be greatly appreciated. If you should have any questions concerning the above, please do not hesitate to contact me.

Sincerely,

Mary P. Kirk
President

APPENDIX B

Perception Survey of Critical Issues Affecting Internet Instruction

Identification of Critical Issues

The issues listed below have been identified in the literature and by educators as critical issues affecting internet instruction. For each item, indicate:

1. **Its Importance** - rate your perception of whether this issue is important in affecting internet instruction.
2. **If the Issue Exists** - indicate if this is a critical issue at your campus/institution.
3. **Your Satisfaction** - rate your personal satisfaction with the internet instruction that exists at your institution in relation to this critical issue.

****

1 **Importance** **1. Not important** **2. Somewhat important** **3. Important** **4. Very important**		2 **Critical Issue** **Y = Yes** **N = No**	3 **Satisfaction Level** **1. Very Dissatisfied** **2. Dissatisfied** **3. Satisfied** **4. Very Satisfied**
Importance (Circle One)		**Critical Issue (Circle one)**	**Satisfaction Level (Circle one)**
1 2 3 4	1. Orientation sessions are necessary in preparing the student for the internet class.	Y N	1 2 3 4
1 2 3 4	2. On-line registration is available and understandable.	Y N	1 2 3 4
1 2 3 4	3. Adequate program planning and development is allowed for on-line courses.	Y N	1 2 3 4
1 2 3 4	4. On-line courses are cost effective.	Y N	1 2 3 4
1 2 3 4	5. The tests are comprehensive and adequately measure student proficiency.	Y N	1 2 3 4
1 2 3 4	6. The technology, including computer access on campus, is sufficient to support the on-line course(s).	Y N	1 2 3 4
1 2 3 4	7. Adequate funding is available for development of on-line course(s) and upgrading technology.	Y N	1 2 3 4
1 2 3 4	8. On-line courses demonstrate comparable academic rigor as traditional courses.	Y N	1 2 3 4
1 2 3 4	9. Appropriate links for study materials support the course competencies.	Y N	1 2 3 4
1 2 3 4	10. The same tuition rate should be charged for in-state and out-of-state students.	Y N	1 2 3 4
1 2 3 4	11. Security measures for on-line courses are adequate.	Y N	1 2 3 4
1 2 3 4	12. On-line class discussions adequately meet social needs, i.e., getting to know classmates and instructor.	Y N	1 2 3 4

1 **Importance** **1. Not important** **2. Somewhat important** **3. Important** **4. Very important**		2 **Critical Issue** **Y = Yes** **N = No**	3 **Satisfaction Level** **1. Very Dissatisfied** **2. Dissatisfied** **3. Satisfied** **4. Very Satisfied**
Importance (Circle One)		**Critical Issue (Circle one)**	**Satisfaction Level (Circle one)**
1 2 3 4	13. On-line students must be self-directed and motivated.	Y N	1 2 3 4
1 2 3 4	14. Faculty are properly trained to instruct on-line course(s).	Y N	1 2 3 4
1 2 3 4	15. On-line delivery of courses results in unnecessary course duplication.	Y N	1 2 3 4
1 2 3 4	16. Faculty are given adequate release time to develop on-line courses.	Y N	1 2 3 4
1 2 3 4	17. Student questions are responded to in a timely manner.	Y N	1 2 3 4
1 2 3 4	18. The instructor responses to students are informational.	Y N	1 2 3 4
1 2 3 4	19. The format for on-line delivery provides a mechanism for the instructor and the students to adequately maintain open communications.	Y N	1 2 3 4
1 2 3 4	20. For on-line courses to be effective, class size must be restricted.	Y N	1 2 3 4
1 2 3 4	21. On-line students have access to comparable student services, i.e., library resources, counseling and advising.	Y N	1 2 3 4
1 2 3 4	22. On-line students are at greater risk to drop the course.	Y N	1 2 3 4

Again, thank you for your time in completing this survey. Please return either by electronic mail kirkm@mcc.montgomery.cc.nc.us or in the return envelope provided.

Mary P. Kirk
Montgomery Community College
P. O. Box 787
Troy, NC 27371
(910) 576-6222, ext. 224

Demographics (check appropriate answer):

Faculty _____
Student _____

Age:

Less than 21_____
21 - 30 _____
31 - 40 _____
41 - 50 _____
51 - 60 _____
61+ _____

Gender:

Male ____
Female ____

Highest Educational Degree:

High School ____
Associate _____
Bachelors _____
Masters _____
Doctorate _____

Appendix B

Date

Dear Survey Participant:

I am a doctoral student in the Adult and Community College Education program at North Carolina State University. My dissertation topic is "Critical Issues affecting Internet Instruction within the North Carolina Community College System." Some of the identified issues in the literature review include:

- Adequate program planning and development
- Funding for course offerings
- Accountability
- Technology infrastructure
- Effectiveness of instruction
- Instate versus out-of-state tuition
- Security measures for individual courses
- Student interaction
- Characteristics of students learners
- Characteristics of distance education faculty
- Workload issues
- Lines of communication between faculty and students
- Student choice, student services, and a balance in student access
- Higher dropout rate

Both community college faculty and students involved in on-line instruction are being surveyed to assess their opinion on this topic. Your voluntary participation and opinion will be valuable to this study and, of course, will be treated confidentially. Should you wish a copy of the survey results, please indicate so, and I will gladly forward a copy to you.

Would you please take a few minutes to answer the attached questions and return the survey to my attention: Mary P. Kirk, Montgomery Community College, P. O. Box 787, Troy, NC 27371. If you should have any questions, please do not hesitate to contact me either by telephone: (910) 576-6222, ext. 224, or by electronic mail: kirkm@mcc.montgomery.cc.nc.us

Again, your participation is greatly appreciated and I shall look forward to hearing from you in the near future.

Sincerely,

Mary P. Kirk
President